SY-TOS for the DOS Environment(SCSI)

User's Guide

ZENITH data systems

Groupe Bull

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Preface

The SY-TOS® system (pronounced *sigh-toss*) is a powerful tape backup and restore utility that allows you to protect your data by backing it up onto magnetic tape. You can use SY-TOS on IBM® Personal Computers, IBM Personal System/2™ computers, COMPAQ Personal Computers or those that are compatible. It is designed to operate with a variety of network and hardware configurations.

This manual assumes you have knowledge of the fundamental operations of your computer system. The manual is organized as follows:

- Chapter 1 Tells you how to install the SY-TOS software. The last section in this chapter is a sample SY-TOS session.
- Chapter 2 Presents points to consider when implementing a backup strategy. Sample strategies are provided which you may modify to fit your backup needs.
- Chapter 3 Gives an overview of the SY-TOS system. It explains the two menu systems that you can use and discusses concepts that are used throughout the manual.
- Chapter 4 Describes how to use the ST-CONFIG utility that comes with the SY-TOS software. This utility gives you the ability to customize SY-TOS as well as to set default settings for SY-TOS operations. The chapter explains in detail how to use each command in the order that they appear on the screen.
- Chapter 5 Presents all the commands that are available in SY-TOS. The descriptions include step-by-step instructions on how to use each command.
- Chapter 6 Explains how to enter SY-TOS commands at the DOS command prompt.
- Chapter 7 Describes how to create custom batch files using the ST-BATCH utility.
- Chapter 8 Explains how to use SY-CLOCK®, a multi-function "software alarm clock", that allows you to run

SY-TOS batch files or any other executable DOS programs at any time of day, completely unattended.

- Appendix A Offers some suggestions for taking care of your tapes.
- Appendix B Describes how to operate SY-TOS under a network environment.
- Appendix C Describes possible problems that may occur when operating SY-TOS and what to do to solve them.
- Appendix D Gives a pictorial roadmap of the Advanced menu system and the ST-CONFIG utility.
- Appendix E Lists the commands that are related to the three types of SY-TOS backups.
- Glossary Defines the terms used in this manual.

You should read the first three chapters at once. Use the remaining chapters and appendixes as you need them.

Conventions Used in this Manual

Throughout this manual, you will see different type styles used. We use:

This typeface to illustrate which commands to select and keys to press,

`This typeface for messages and prompts from the SY-TOS system,`

`This typeface to show your entry in examples.`

Additionally, we use the names of keys as they appear on the keyboard and surround the name with angle brackets. For example:

<Esc>.

When two keys appear together, you must press and hold the first key while pressing the second key. For example:

<Ctrl> <PgUp>.

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Chapter 1. Getting Started

This chapter explains how to install and execute the SY-TOS® software. It also offers a practice backup session to help you become familiar with SY-TOS.

What Do You Need to Get Started?

Before installing SY-TOS, make sure you have the following hardware and software.

Hardware Requirements

You will need the following hardware in order to use SY-TOS.

- An IBM® Personal Computer, IBM Personal System/2™, a COMPAQ Personal Computer or one that is compatible.
- A monochrome or color monitor.
- At least 512KB of memory. To obtain maximum performance, 640KB of memory is recommended.
- A tape cartridge system.

Software Requirements

The SY-TOS software runs on the following operating and network systems:

- Version 3.0 or a later version of the MS-DOS® operating system.
- Version 1.2.1 or a later version of the 3COM™ 3+Share® network environment.
- Novell, Incorporated's Advanced NetWare™ 1.01 or later versions. This also includes ELS Level I and SFT Levels I and II as well as SFT Level II with TTS.
- IBM PC LAN 1.12 or later versions, MS-NET and compatible networking environments.

NOTE
You can use the current version of SY-TOS to access information on a tape created with earlier versions of SY-TOS. However, because Sytron continues to enhance SY-TOS to be compatible with the latest advancements in personal computer technology (such as operating systems and tape drives), previous versions of SY-TOS cannot access information on tapes created with a later version of SY-TOS.

Copying the SY-TOS Diskette

We recommend that you make a copy of the SY-TOS distribution diskette. Use the DOS command DISKCOPY. (Note that using the DOS command COPY will not make a complete backup copy of the SY-TOS distribution diskette.) Label this diskette with the information that appears on the SY-TOS diskette (for example, the part number in the upper-right corner). Use this copy to install SY-TOS and store the original in a safe place to use as a backup in case something happens to the copy diskette.

Note that SY-TOS is licensed to be used in conjunction with only one tape controller card (or equivalent) and one central processing unit at a time.

Installing the SY-TOS Software

The ST-INSTAL program copies all of the SY-TOS utilities to a user specified disk and directory.

Before installing the SY-TOS software, insert the SY-TOS diskette into drive A and use the DOS command DIR to determine if a README.BAT file is present on the diskette. This is a batch file containing additional information that was not included in this manual. If the file exists, you should review its contents before continuing with the SY-TOS installation.

To review the README file, insert the SY-TOS diskette into drive A.

At the DOS command prompt, type **A:** and press **<Enter>**.

Type the following:

```
A:\>README <Enter>
```

You can also print the file by directing it to a printer. For example:

```
A:\>TYPE README.BAT >> PRN <Enter>
```

SPECIAL NOTES

- Before installing SY-TOS, we recommend you use the DOS command CHKDSK. This command checks the directories and File Allocation Table (FAT) for any errors. Refer to your operating system's manual for more information on the CHKDSK command.
- If you plan to operate SY-TOS under a network environment, please refer to Appendix B in conjunction with the following sections. Appendix B describes special considerations which must be made when running SY-TOS under a network environment.

Starting the ST-INSTAL Program

This section describes how to use ST-INSTAL to copy the SY-TOS files to the appropriate location on a disk.

Insert the SY-TOS diskette into drive A.

At the DOS command prompt, type **A:** and press **<Enter>**.

Type **STINSTAL** and press **<Enter>**.

Follow the instructions that appear on the screen. ST-INSTAL will prompt you through the installation process.

NOTE
The README.BAT file is not copied to disk during the installation process. Use the DOS COPY command if you want to copy this file to your hard disk.

Responding to ST-INSTAL's Questions

ST-INSTAL prompts you for the hard disk where you want to install SY-TOS.

Type the disk letter and press **<Enter>**.

To accept the disk letter displayed on the screen, simply press **<Enter>**.

ST-INSTAL next prompts you for the directory where you want ST-INSTAL to place the SY-TOS files. If the directory does not exist, ST-INSTAL will create it for you.

Type the directory where you want the SY-TOS files to reside and press <**Enter**>.

To install SY-TOS in the root directory, simply press <**Enter**>.

ST-INSTAL will display a confirmation prompt before copying the SY-TOS files to the specified disk and directory.

Completing the Installation of SY-TOS

ST-INSTAL copies the SY-TOS utilities and other files necessary to run SY-TOS to the specified disk and directory.

SY-TOS informs you when the installation is complete and returns you to the DOS command prompt on the disk and in the directory where SY-TOS is installed.

Before executing SY-TOS, you must edit the CONFIG.SYS file to include the BUFFERS and FILES statements if they do not already exist. The values for these statements must be set to at least 20 (for example, BUFFERS=20).

After editing the CONFIG.SYS file, you must reboot the system in order for the new values to take effect.

Executing SY-TOS

To use SY-TOS, make sure you are in the directory where SY-TOS is installed.

Type **SYTOS** and press <**Enter**>.

NOTE
You can access any of the SY-TOS utilities from a floppy disk drive. Simply insert the SY-TOS diskette into the disk drive and type **SYTOS**, **STCONFIG**, **STBATCH** or **SYCLOCK** and press <**Enter**>. Note that when executing ST-CONFIG and SY-CLOCK from a floppy disk drive, the diskette cannot be write protected.

A Quick Look at SY-TOS

This section presents a sample session which demonstrates how you can quickly and easily back up and verify files using SY-TOS' Advanced menu system. It does not illustrate all of SY-TOS' capabilities, but merely introduces some basic tasks so that you can be more comfortable when using the product for the first time.

Starting the Practice Session

Before starting this SY-TOS session, insert a blank tape into the tape drive.

Make sure you are in the directory where SY-TOS is installed. (Use the DOS command CD to change the directory.)

At the DOS command prompt, type **SYTOS** and press <**Enter**>.

The Advanced menu system will appear on your screen. This is the starting point for all SY-TOS operations. The selection cursor is highlighting the Backup command on the command bar. Your screen will look similar to Figure 1-1.

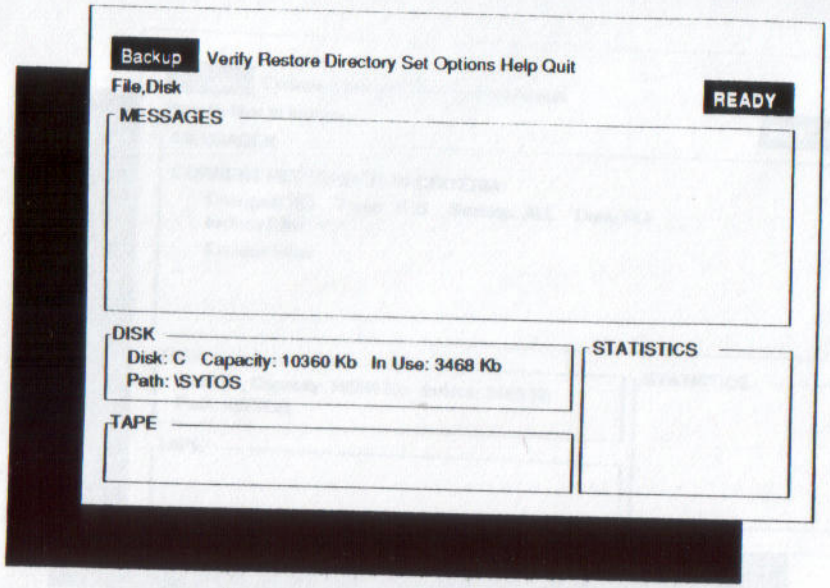

Figure 1-1 The Screen Display of the Advanced Menu System

There are several options that you can select to customize your backup, verify and restore operations.

Press the <→> or <**Space Bar**> key five times to move the selection cursor to the Options command.

Notice how the second line changes as you move from command to command. SY-TOS displays the associated subcommands on this line.

The second line contains the various options that you can select.

Press <**Enter**>.

SY-TOS displays the Options commands on the command bar at the top of your screen and places the default settings for each one in the MESSAGES window. Your screen will look similar to Figure 1-2.

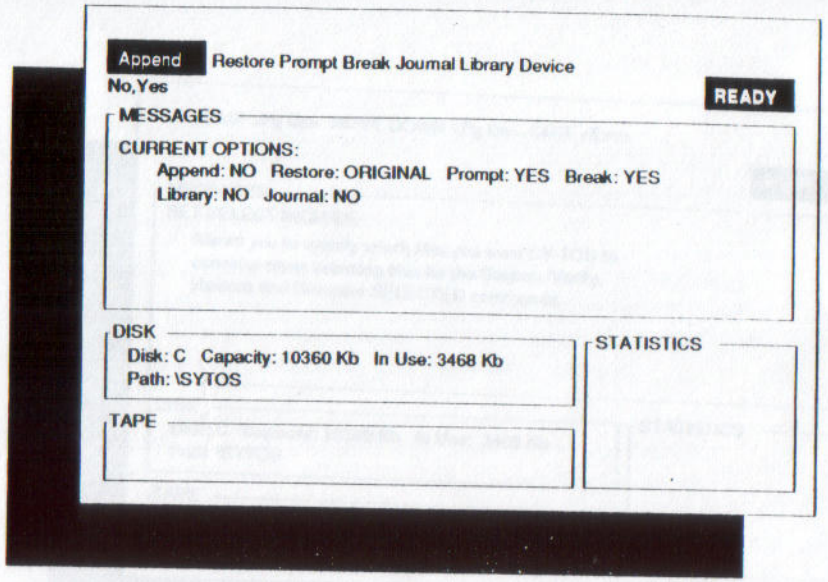

Figure 1-2 Choosing the Options Command

For this session, we will use the default settings that come with SY-TOS. You can read about the Options commands in the manual at a later time.

Press the <**Esc**> key to return to the command bar, then press the <←> key once and press <**Enter**> to select the Set commands.

SY-TOS displays the Set commands. When backing up, verifying, displaying or restoring files, you can specify certain files or have SY-TOS automatically select files based on the preset values for the Select commands.

Press the <**S**> key to choose the Select command.

Notice that you can select a command by typing the first letter of the command name.

SY-TOS displays the Set Select commands on the command bar at the top of your screen and places the default settings for each one in the MESSAGES window. Your screen will look similar to Figure 1-3.

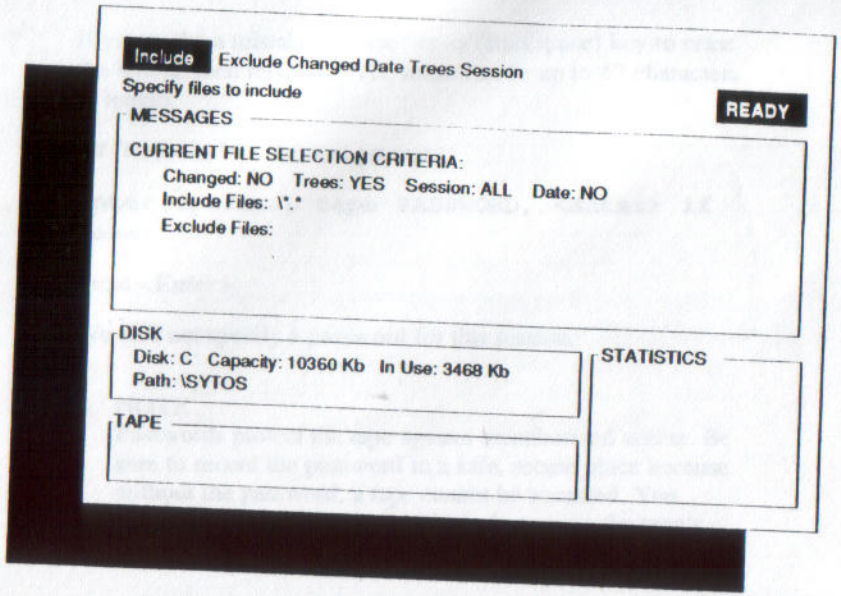

Figure 1-3 Choosing the Set Select Command

We will not change the settings for this sample session. However, you can see the values that can be assigned for the Set Select commands.

Wherever the selection cursor appears on the command bar, you can press the <F2> function key to obtain help on the highlighted command.

Press the <F2> function key.

After accessing the Help facility, SY-TOS displays a description of the Set Select Include command in the MESSAGES window. Figure 1-4 gives an example of SY-TOS' on-line help.

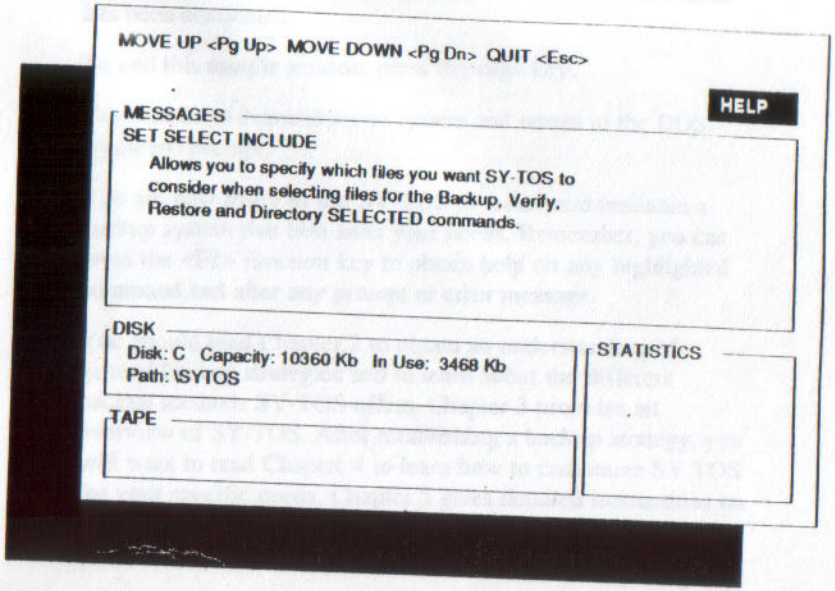
MOVE UP <Pg Up> MOVE DOWN <Pg Dn> QUIT <Esc>
HELP
MESSAGES
SET SELECT INCLUDE
Allows you to specify which files you want SY-TOS to consider when selecting files for the Backup, Verify, Restore and Directory SELECTED commands.
DISK
Disk: C Capacity: 10360 Kb In Use: 3468 Kb
Path: \SYTOS
STATISTICS
TAPE

Figure 1-4 A Sample Help Display

You can use the <PgDn> key to scroll additional Help text onto the screen when it exists.

Press the <Esc> key to exit the Help facility and return to the command bar.

Press the <F1> function key to return to the Advanced menu command bar. The values for the Set Select commands will remain displayed in the MESSAGES window.

We will be using the Backup File Selected command to back up all the files and directories on disk C. SY-TOS will use the values displayed on the screen for the Set Select commands.

Press the <B>, <F> and <S> keys to select the Backup File Selected command.

The system displays the following prompt:

```
Enter a tape VOLUME NAME:
```

SY-TOS prompts you for the tape name before it executes the Backup command. It then starts at the beginning of the tape to back up the preselected files. (In this case, all the files and directories on disk C.)

Type a name that you want to assign to the tape and press

If you make a mistake, use the <←> (Backspace) key to erase the letters; then retype it. The name can be up to 47 characters in length.

SY-TOS displays the next prompt.

```
Enter optional tape PASSWORD, <Enter> if
none:
```

Press <Enter>.

We will not specify a password for this session.

> **NOTE**
> Passwords protect the tape against unauthorized access. Be sure to record the password in a safe, secure place because without the password, a tape cannot be accessed. You cannot remove a password without destroying the tape's contents.

Notice that the READY indicator changes to WAIT as SY-TOS backs up the preselected files. The filenames will appear in the MESSAGES window as SY-TOS backs up each one.

The tape's name as well as the creation date and time appear in the TAPE window. SY-TOS gives the tape a volume number which also appears in this window.

The total time, the backup time, the number of files backed up, and the size of the files in kilobytes appear in the STATISTICS window. The total time includes any tape overhead (that is, time spent not actually backing up information; for example, rewinding the tape).

After you back up, Sytron highly recommends that you specify the appropriate Verify command to ensure that the information has been placed correctly on the tape. SY-TOS will compare the information on the tape with the corresponding information on the disk.

Press the <→> key to move the selection cursor to the Verify command and then press <Enter>. Press the <F> and <S> keys to choose the Verify File Selected command.

SY-TOS displays the values for the Set Select commands in the MESSAGES window before starting to verify the preselected files. As SY-TOS verifies each file, its name will appear in the MESSAGES window. If SY-TOS cannot verify a file, it will notify you. SY-TOS will also notify you when the verification has been completed.

To end this sample session, press the <Q> key.

You exit the Advanced menu system and return to the DOS command prompt.

You are now ready to use SY-TOS to create and maintain a backup system that best suits your needs. Remember, you can press the <F2> function key to obtain help on any highlighted command and after any prompt or error message.

You should read Chapter 2 to obtain an understanding of general backup strategies and to learn about the different backup methods SY-TOS offers. Chapter 3 provides an overview of SY-TOS. After establishing a backup strategy, you will want to read Chapter 4 to learn how to customize SY-TOS for your specific needs. Chapter 5 gives detailed instructions on how to use each command in the Advanced menu system.

Chapter 2. Implementing a Tape Backup Strategy

Establishing a backup strategy to meet each user's needs requires careful planning. After reading this chapter you should be able to establish a strategy with reasonable ease. In this chapter, we present points you should consider, describe the various backup methods SY-TOS has to offer and give several sample strategies that you may use or modify to fit your backup needs.

With the amount of information that is available to you in a typical office comes a certain level of responsibility – a responsibility often ignored until it is too late. Everyone relying on personal computers must take precautions to ensure data is not lost.

To protect your data, it is important that the person responsible for backing up your system understands the rudimentary elements of the computer and of the backup process. If you are not this individual, you must make sure the person who is responsible has this knowledge.

Losing information due to hardware or power failure, or through operator error, can be costly and in some cases devastating. The time and effort required to retrieve lost information can translate into a substantial amount of wasted money.

The implementation of a plan to recover from this "disaster waiting to happen" should, therefore, be an essential policy for anyone interested in his/her investment in computing data and productivity. A well tailored backup strategy must not only meet the present needs, but should also provide an avenue to tailor and expand this strategy as your needs change or expand.

What Should I Consider?

You have purchased SY-TOS as an insurance package for your data. Before implementing a backup strategy, you must first ask yourself the question *"How much time, effort and money will be lost if I should lose any data?"* The answer will set the tone for creating a backup strategy to best suit your needs.

For example, if you rely on several databases to produce reports, payroll checks or even customized letters, losing a database could be disastrous. In this scenario, you would want to back up the databases each day so that if something were to happen to one, you could reconstruct it with little effort.

If you are responsible for protecting the data existing on a network, you would want to back up the information on a daily basis. If time is a factor, you might want to exclude system files or only back up files that have changed each day. On a weekly basis, you could back up your entire system.

If you are a casual computer user, backing up your system each day does not make sense. It may be easier to back up only the files you have worked with on a particular day.

When information is vital to you, such as payroll files, legal files, ledger files and financial information files, it becomes imperative to back up all the information each day. Losing a style sheet or even a chapter of an elaborate document would take too much time to recreate.

The following section describes the various backup methods that SY-TOS has to offer. Upon reading this section, you can determine which method suits your backup requirements.

SY-TOS' Tape Backup Methods

SY-TOS offers different backup methods to suit each user's needs. The flexibility of backing up information is also true when retrieving the information. With SY-TOS, you can list individual files to back up, preselect a series of files that SY-TOS will automatically back up, or back up the entire contents of a DOS disk partition or an entire physical hard disk. Refer to Chapter 5 for detailed descriptions of each SY-TOS command.

A File-by-File Backup

When you back up files, SY-TOS copies the files onto tape contiguously. That is, each file is complete and written to tape one after another. Using the file-by-file method, SY-TOS locates all the fragments of the file to copy in its entirety to tape. Because SY-TOS has to locate all file fragments, this method may take slightly longer than the DOS Disk backup method. However, the file-by-file method offers more security and flexibility because you can retrieve individual files as entire units. For example, if a file-by-file backup tape becomes damaged, you are more likely to be able to recover files because complete file information has been recorded throughout the tape.

Using SY-TOS, you can specify a list of files to back up or preselect a series of files that SY-TOS will automatically copy to tape.

Backing up a List of Files

SY-TOS' Backup File List command enables you to specify particular files to copy to tape. You can enter filenames at the SY-TOS prompt or mark the files using SY-TOS' easy-list file selection method. The Backup File List command gives you the opportunity to list specific files. This feature is useful when you want to quickly select a few files for archival reasons or to transfer data. However, if you want to back up all the files on your system or a subset, you might find the Backup File Selected command a faster and easier method.

Backing up Preselected Files

Using the Backup File Selected command to copy preselected files to tape offers the most flexibility in SY-TOS. SY-TOS selects the files to back up based on the criteria you have established with the Set Select commands. You can configure the Set Select commands to include all files on your system or only a subset.

For example, the Set Select Changed command enables you to create incremental backup tapes. SY-TOS will back up only files that have changed or have been created since the last backup session.

You can further tailor your backup tapes to include files with specific creation dates. Using the Select commands in conjunction with the Backup File Selected command gives you an entire range of criteria to work with to create customized backup tapes.

A DOS Disk Backup

When you back up a DOS disk partition using the Backup Disk command, SY-TOS sequentially copies only blocks of existing information. This method is faster than the file-by-file method; however, it offers less flexibility during a backup. For example, you may have many files that have not changed since the last backup session. Using the DOS Disk method, the entire DOS disk partition that is in use will be backed up to tape, including unchanged information.

When you want to retrieve information from a DOS Disk backup, SY-TOS offers several alternatives. You may access specific files using the Restore Disk List command, retrieve a series of files using the Restore Disk Selected command or restore the entire DOS disk. When restoring information from a DOS Disk backup tape, SY-TOS uses DOS' assistance to ensure that information is not placed on possible bad disk sectors on the target disk.

> **NOTE**
> Unlike the file-by-file method where SY-TOS locates all fragments of each file, the DOS Disk backup method simply copies block segments as they appear on the disk. Using the DOS Disk method SY-TOS places the file structure information at the beginning of the backup tape as opposed to throughout the tape as with file-by-file. If for some reason the beginning of the tape becomes damaged, SY-TOS will not be able to retrieve any DOS disk information past the damaged spot.

A Device Backup

SY-TOS offers an additional backup method: a device backup. When you specify this option, SY-TOS backs up an exact image of your entire physical hard disk, sector by sector. This method gives you less flexibility and reliability for restore operations due to the lack of file structure during the backup operation. It will also back up unused space even if only a small portion of the disk is actually being used. Because the device backup is an exact image of a hard disk, it is possible that when you restore an image backup to a different disk, information could be placed in a bad sector on the target disk; thus, losing the information.

The device backup is not recommended unless it is necessary to back up DOS and non-DOS partitions that reside on the same physical disk.

Creating a Backup Policy

You should never try to maintain a backup strategy with only one tape. We recommend that you have a minimum of three tape volume sets that you rotate. In addition, you should keep a master tape volume set off site or in a fire proof unit.

How Many Tapes Will I Need?

The number of tapes that compose a tape volume set is determined by the amount of information you want to copy to tape and the type of tape system you are using.

The *streaming tape system* requires the DC600 series tape cartridges. Using these systems, SY-TOS copies information to a quarter inch tape cartridge, about the size of a small paperback book. Each tape can hold 45 to 150 megabytes or more of information depending on the tape drive and tape cartridge.

Peak performance occurs when the tape is "streaming," or moving past the tape drive read/write head as quickly as the tape system's motor can drive it - hence the name.

When backing up a DOS disk, you can use the DISK window in SY-TOS to calculate the approximate number of tapes your backup will require. The DISK window displays the storage capacity and the amount in use.

When backing up files, you can use the Directory Disk feature to display the files on disk that you want to back up. The Directory display lists the size of each file and the STATISTICS window shows you the total size of the specified files. You can use the total size to calculate how many tapes the backup will require.

If your backup session requires more than one tape volume, SY-TOS will prompt you to insert another tape when the first tape is full. SY-TOS records the number of tapes used and will prompt you for the correct order upon verifying and/or restoring information from a multi-volume backup session.

Another factor that determines how many tapes you will need is the Options Append feature. SY-TOS allows multiple disk and file-by-file backups to be placed on the same tape. A new tape is not needed for each backup session. If the Options Append command is set to Yes, SY-TOS will automatically append information to existing information on the inserted tape.

Data Security

SY-TOS offers multi-level password protection that limits access to tapes, disks and disk file directories.

If you are concerned about protecting your data on disk, you can give users limited access to directories and files when using SY-TOS on your system.

In addition, you can assign a password to each tape volume set. If a tape volume has a password assigned to it, then no one can access the contents of the tape without specifying the correct password. Once you assign a password to a tape, it cannot be removed without destroying the tape's contents. Consequently, when assigning a password to a tape volume, record it in a safe and secure place.

Although password protection will guard against unauthorized access to information on tape, you may prefer to physically lock the tapes away.

Labeling Your Tape Volumes

In addition to assigning a name and optional password to a tape volume set, you should label the tape volumes so that you can easily recognize them. Establish a standard naming convention such as:

Tape Name, Date and Time, Volume Number, Description of Backup (for example, full file-by-file, changed files, etc.).

Sample Backup Strategies

This section presents several backup strategies that we believe will create a good insurance policy against losing data. Upon reviewing the samples, you may want to modify them to fit your backup needs.

Note that both sample strategies instruct you to verify immediately after each backup session. The Verify commands compare information on tape to the information on disk. If there are any problems with the data you backed up to tape, you will know immediately upon verifying. You can then repeat the backup and ensure that the information is placed correctly on tape.

If you postpone the verification and there are problems with the information on tape, you may only discover the problem when you attempt to retrieve the information from the tape. At this point you are relying on your backup tape to contain uncorrupted information. However, you may find that this is not true and you may not be able to restore the information to its original condition.

Starting Out

After purchasing SY-TOS, start out with a full file-by-file backup of your system and then verify the backup session. Store this copy in an off site location. Depending upon the backup strategy chosen, the off site backup should be periodically replaced with a more recent backup of the entire system.

You may then want to use the following samples as models in creating your own backup strategy.

Sample 1 - Incremental Backups

Using SY-TOS, you may back up each day only those files that have changed or have been created since the last backup. You request this by first using the Set Select commands. Refer to Chapter 5 for details on each command. Chapter 3 offers an overview on other file criteria that you may want to consider.

To back up the files, you specify the Backup File Selected command. Next, select the Verify File Selected command to

verify that all changed and created files since the last backup were correctly copied to tape.

Although one tape may be able to hold more than one day's files, it is better to reserve a tape for each day.

Using this backup strategy, you would need a total of six tape volume sets: one for each day Monday through Thursday, and two tapes to alternate Friday master backups. For example, begin with a full file-by-file backup and verification on Friday. Then on Monday through Thursday back up only the files that have changed and have been created since the previous backup session. You would overwrite each tape's contents on the same day of the following week. (For example, use the Monday tape each Monday.)

On the following Friday, you would back up your entire system with a new tape and repeat the incremental backup on the rest of the days. On the subsequent Friday, you would overwrite the first Friday's master tape to back up your entire system. Figure 2-1 illustrates this incremental backup strategy.

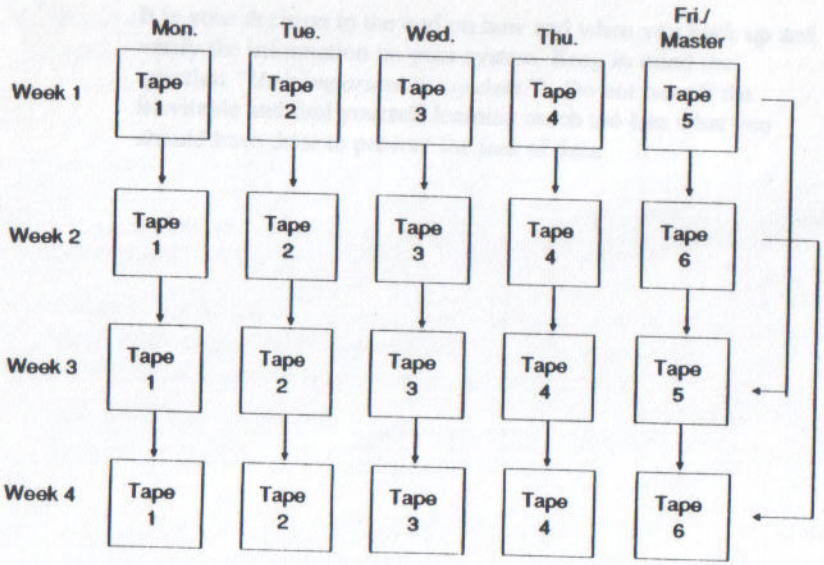

Figure 2-1 A Sample Incremental Backup Strategy

NOTE
You may modify the Set Select criteria to suit your backup needs. With this backup strategy, you ensure that if information is lost on disk, you have captured each day's activity and each week's entire system information. You would not spend many hours recreating the lost information.

If the information is critical to you, modify this backup strategy to back up all files each day. You would then have a daily record of your system.

Sample 2 - A Rotation Backup

Another backup strategy would be to have three tape volume sets and rotate them. The tape you would be using would be the tape containing the oldest backup. In this case, you would back up and verify all disk contents to each tape. You could use the Backup Disk command or the Backup File Selected command.

Even if an entire system backup fills up only part of one tape, we recommend that you use a different tape volume for each backup session.

Figure 2-2 illustrates a three tape rotation backup strategy.

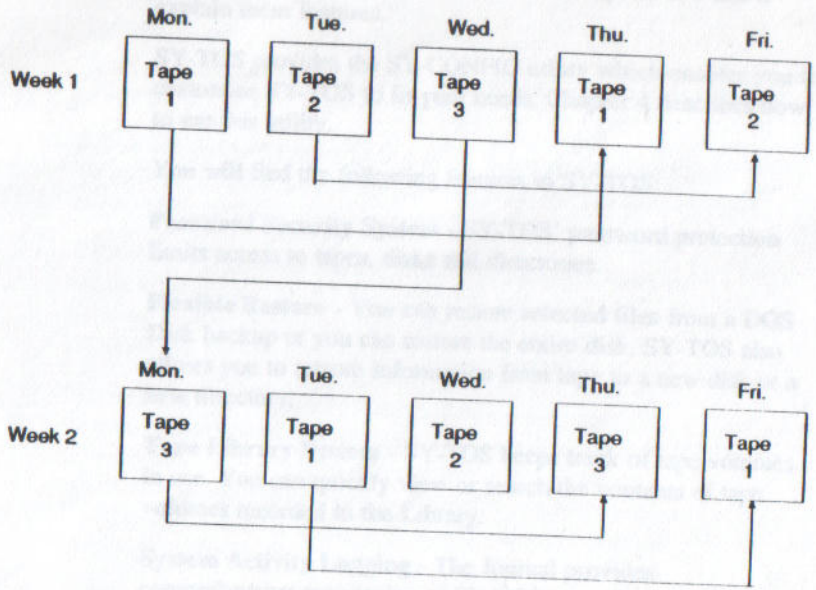

Figure 2-2 A Sample Rotation Backup Strategy

Sample 3 - An Automated Backup Strategy

You can execute SY-TOS from DOS created batch files or ST-BATCH created batch files. Using the previous sample backup strategies, you could create batch files to back up and verify your system each day. Instead of entering SY-TOS, you would simply type the batch file's name and SY-TOS would automatically perform the necessary tasks.

In addition, you can make the batch files execute automatically at the same time each day using the optional SY-CLOCK utility. This would result in a fully automated backup strategy. Refer to Chapters 6, 7 and 8 for information on how to use these SY-TOS features.

A Reminder

It is your decision in the end on how and when you back up and verify the information on your system. Keep in mind the question *"How important is my data?"* Do not put off the inevitable and find yourself learning much too late what you should have done to prevent the loss of data.

Chapter 3. An Overview

SY-TOS is a powerful tape backup and restore utility that combines high performance with ease of use. It comes with two menu systems:

- Novice.
- Advanced.

In addition to the menu systems, SY-TOS gives you the opportunity to enter SY-TOS commands directly at the DOS command prompt or to create a batch file using the ST-BATCH utility. You may also use the SY-CLOCK® utility to execute SY-TOS batch files or any other executable DOS programs at a specified time, completely unattended. Chapters 6, 7 and 8 explain these features.

SY-TOS provides the ST-CONFIG utility which enables you to customize SY-TOS to fit your needs. Chapter 4 describes how to use this utility.

You will find the following features in SY-TOS:

Password Security System - SY-TOS' password protection limits access to tapes, disks and directories.

Flexible Restore - You can restore selected files from a DOS Disk backup or you can restore the entire disk. SY-TOS also allows you to restore information from tape to a new disk or a new directory.

Tape Library System - SY-TOS keeps track of tape volumes in use. You can quickly view or search the contents of tape volumes recorded in the Library.

System Activity Logging - The Journal provides comprehensive monitoring of SY-TOS operations. It can be reviewed on the screen or through printout.

Backup Verification - The Verify command checks the accuracy of backed up information by comparing the information on tape to that on disk.

Append Feature - You can append multiple file-by-file, DOS Disk or Device backups to the same tape.

Multi-Volume Support - During backup, SY-TOS allows you to create several tape volumes for systems whose disk capacity is larger than the tape's capacity. SY-TOS will prompt you to insert the correct tape upon verifying and/or restoring information from a multi-volume backup session.

File Selection Criteria - You may use specified file selection criteria to preselect files for SY-TOS' operations.

Responsive On-Line Help - Contextual help is available at the touch of a key.

The Novice Menu System

The Novice menu system offers a subset of SY-TOS' features. Using this system, you can quickly back up, verify or restore files or DOS disks by simply pressing a function key.

Using the ST-CONFIG utility you can specify which menu system you want to appear each time you use SY-TOS. Chapter 4 explains how to select a menu system.

When in the Novice menu system, SY-TOS uses the Options and Select default settings specified in the ST-CONFIG utility to select files to back up, verify and restore. Refer to Chapter 4 for more information about preselecting files through the ST-CONFIG utility.

Before using the Novice menu system, you might want to check the default settings for the Options and Select commands in the ST-CONFIG utility to ensure they are the ones you want.

When you first enter the Novice menu system, your screen looks like Figure 3-1.

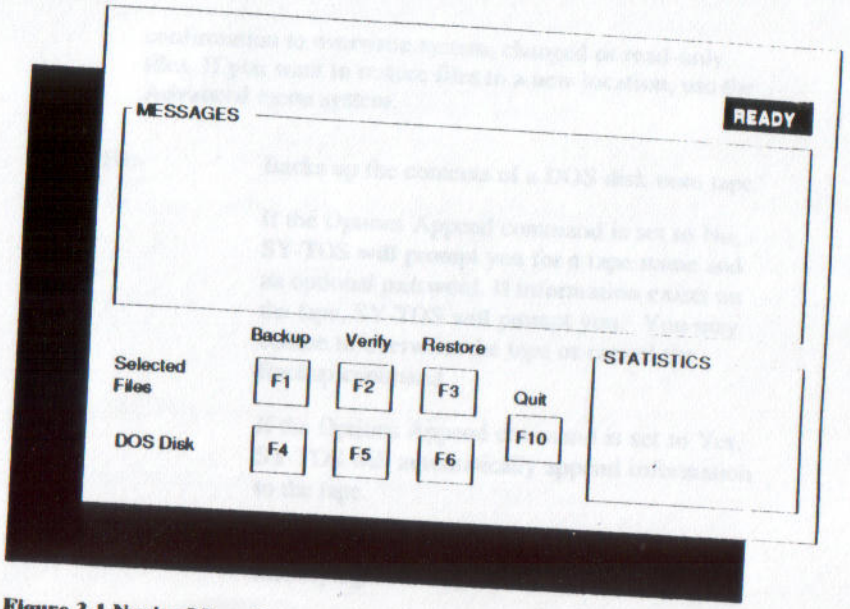

Figure 3-1 Novice Menu System Screen Layout

SY-TOS displays information in the MESSAGES window about the information that is currently being backed up, verified or restored.

Below the MESSAGES window is the function key template. To select a command, you press a function key that corresponds to the command you want to execute.

SY-TOS displays information in the STATISTICS window about the current task. It will display the time it takes to perform a task, the number of files backed up, verified or restored and the total size of the files (in kilobytes).

The word READY appears at the upper-right corner of the screen. This serves as an indicator which confirms that SY-TOS is ready to accept your commands. When SY-TOS needs additional information from you, it changes the indicator to INPUT. The indicator changes to WAIT when SY-TOS is executing a command.

Selecting a Novice Command

In the Novice menu system, you select a command by pressing a function key. You then press <Enter> to confirm your request or press <Esc> to cancel the task.

If a command requires additional information (such as a tape name), SY-TOS will prompt you.

As SY-TOS executes the specified command, the DISK and TAPE windows appear on the screen to display information about the disk and tape in use. These windows are described in more detail later in this chapter.

In the MESSAGES window, SY-TOS will display the file selection criteria and a list of all the files that are being backed up, verified or restored during file-by-file operations. It will notify you if there are any problems with specific files.

Once SY-TOS has completed the command, it redisplays the Novice function key template for you to make another selection.

The function keys that you may press to select a command are the following.

Key to Press	Activity
<F1>	Backs up preselected files onto tape from a disk. If the Options Append command is set to No, SY-TOS will prompt you for a tape name and an optional password. If information exists on the current tape, SY-TOS will prompt you. You may choose to overwrite the contents of the tape or cancel the Backup command. If the Options Append command is set to Yes, SY-TOS will automatically append preselected files to the tape.
<F2>	Verifies preselected files contained on the current tape with the corresponding files on the disk.
<F3>	Restores preselected files contained on the current tape to a disk.

SPECIAL NOTE
Because SY-TOS writes file information to disk when you restore, you might want to check the ST-CONFIG utility to make sure that the selection criteria are the ones you want. Make sure that Options Prompt is set to Yes and Options Restore is set to Original. This will ensure that the correct files are restored and that you are prompted for confirmation to overwrite system, changed or read-only files. If you want to restore files to a new location, use the Advanced menu system.

<F4>	Backs up the contents of a DOS disk onto tape. If the Options Append command is set to No, SY-TOS will prompt you for a tape name and an optional password. If information exists on the tape, SY-TOS will prompt you. You may choose to overwrite the tape or cancel the Backup command. If the Options Append command is set to Yes, SY-TOS will automatically append information to the tape. SY-TOS will prompt you for the disk letter identifying the disk you want to back up.
<F5>	Verifies the contents of a DOS disk residing on a backup tape with that of the corresponding disk.
<F6>	Restores a DOS Disk backup on tape to a disk.
<F10>	Exits SY-TOS and returns to DOS.

The Advanced Menu System

The Advanced menu system allows you to access all of SY-TOS' features. When you first use SY-TOS, the Advanced menu system is in effect. Your screen will look similar to Figure 3-2.

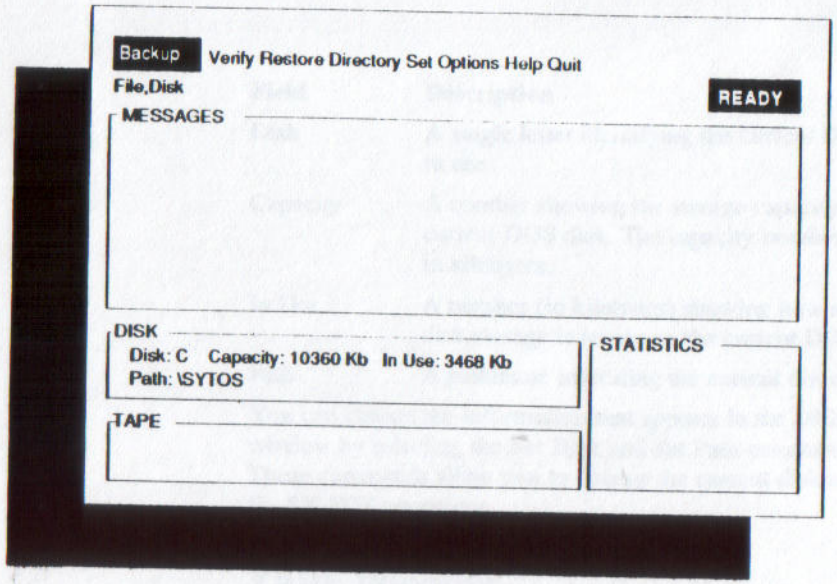

Figure 3-2 Advanced Menu System Screen Layout

The following sections describe the Advanced menu system screen layout and command selection.

STATUS Indicator

The word READY appears at the upper-right corner of the screen. This serves as an indicator which confirms that SY-TOS is ready to accept your commands. When SY-TOS needs additional information from you, it changes the indicator to INPUT. The indicator changes to WAIT when SY-TOS is executing a command and to BATCH when SY-TOS is running as a batch file. When you request help, the indicator changes to HELP.

Command Bar

A horizontal list of commands appears on the top line of the screen. We refer to this line as the *command bar*. Reverse video serves as a *selection cursor* to highlight one command at a time. A list of subcommands appears below the highlighted command. When there are no more subcommands, a description appears.

The commands are organized in tree structures. Related tasks are grouped together. This makes it easy to find a command and to choose between its options. Figure 3-3 gives an example of the tree structure for the Backup command.

Backup Verify Restore Directory Set Options Help Quit

File Disk

List Selected

Figure 3-3 The Tree Structure for the Backup Command

Appendix D contains a map illustrating SY-TOS' entire command tree structure.

Error Messages

When an error occurs during a SY-TOS task, SY-TOS will display an error message on the third line of the screen in reverse video accompanied by an audible tone or will display it in the MESSAGES window.

MESSAGES Window

SY-TOS displays informational messages in the MESSAGES window. These messages alert you to what is currently happening or the status on what has just happened. File listings from disk and tape directories as well as file selection criteria and Options command settings appear in this window.

When SY-TOS' Journal is open, SY-TOS places these messages in a file or sends them to a printer so that you can review them.

DISK Window

The DISK window displays the current information about the disk and directories that you are using. The fields that appear in this window are the following:

Field	Description
Disk	A single letter identifying the current DOS disk in use.
Capacity	A number showing the storage capacity of the current DOS disk. The capacity number will be in kilobytes.
In Use	A number (in kilobytes) showing how much disk storage is in use on the current DOS disk.
Path	A pathname indicating the current directory.

You can change the information that appears in the DISK window by selecting the Set Disk and Set Path commands. These commands allow you to change the current disk and path for SY-TOS operations.

TAPE Window

When you access a tape during a SY-TOS session, the following information appears in the TAPE window:

Field	Description
Name	A tape name. When you create a tape, you specify a name. Each time you access that tape, the name will appear in the TAPE window.
Created on, at	The date and time the tape was created.
Volume #	The tape number. When the amount of information on the disk exceeds the capacity of the tape during backup operations, SY-TOS will prompt you to insert another tape and will assign the tape a number. Upon verifying, restoring or displaying the information on multiple tapes, SY-TOS will prompt you to insert the next tape in the correct order.

STATISTICS Window

When you select the Backup, Verify, Restore or Directory commands, SY-TOS displays the number of files included in the operation and the total size of those files (in kilobytes). For Backup, Verify and Restore operations, SY-TOS will also display the time the task began and the time required to complete the task.

When SY-TOS' Journal is open, SY-TOS places these statistics in the Journal file or sends them to a printer so that you can review them.

NOTE
Because SY-TOS considers the disk space used by all directory entries and any bad sectors on the disk, the STATISTICS window values may differ from the "In Use" value in the DISK window. These values may also differ from those returned by the DOS CHKDSK command and between the SY-TOS DOS Disk commands themselves.

Selecting a Command

To select a command, move the selection cursor to highlight it and then press <Enter>. If there are subcommands which must be selected, highlight them (one after another) and press <Enter> until there are no more available. Pressing the <Enter> key at the last option will execute the command.

Some commands require you to type information at a prompt (for example, a filename). SY-TOS displays the prompts on the first line on the screen.

You may press the following keys to move the selection cursor to highlight and then select a command:

Key to Press	Activity
<End>	Highlights the last command.
<Enter>	Selects the highlighted command. Any subcommands from the second line move up to the command bar so that you may select one. When there are no further options to highlight, the final pressing of <Enter> executes the command.
<Esc>	Displays the previous level of commands in the command tree structure system.
<F1>	Displays the top level of commands when on the command bar.
<Home>	Highlights the first command.

<←> Left arrow or <←> Backspace	Highlights the command to the left, wrapping around to the last command when you have reached the first command.
<→> Right arrow or <Space Bar>	Highlights the command to the right, wrapping around to the first command when you have reached the last command.

A Short Cut to Command Selection

You can also type the first letter of the command to select it. SY-TOS will automatically display the next level of commands until there are no further commands to select. For example, to select the Backup File Selected command, press the <B> <F> and <S> keys. The command descriptions in Chapters 5 and 6 list the initial letters you are required to type for each command. The initials appear in angle brackets next to each command name at the beginning of each section. This method allows you to move directly to a command and may be helpful when you want to quickly specify a SY-TOS operation. However, moving the selection cursor gives you the opportunity to read a description below the highlighted command.

When there is a command that requires you to input additional information, SY-TOS will prompt you to type the information on the first line on the screen. SY-TOS will sometimes provide a default value at the prompt which you may want to select. Type the required information and press <Enter>, or press <Enter> to accept the default value.

The On-Line Help Facility

In addition to providing one line descriptions for each command, SY-TOS displays additional help text in the MESSAGES window when you request it. To request help on a command, first highlight it and then press the <F2> function key. Help text pertaining to the highlighted command will appear in the MESSAGES window. You may use the <PgUp> and <PgDn> keys to view additional lines of help text if they exist.

In addition to help for commands, SY-TOS also offers help text for prompts and error messages. Simply press the <F2> function key at a prompt or upon receiving an error message to display the help text in the MESSAGES window. You may access the on-line help facility through ST-CONFIG, ST-BATCH and the Advanced menu system.

Specifying Filenames

Sometimes SY-TOS requires you to specify a filename(s) or directory before executing a command. The following sections explain the rules for specifying files and how to select them.

Wildcards

When SY-TOS requests you to enter filenames, you may use the DOS wildcards to quickly specify a group of files that have similar names.

There are two wildcards that you may use: ? and *. Wildcards represent any character(s) that is a valid filename character(s).

The ? indicates that any one character may occupy its position. You may use the ? wildcard anywhere within a filename or in its extension. For example, suppose you had the following list of files that you wanted SY-TOS to back up:

test1.ext	test4.ext
test2.ext	test5.ext
test3.ext	test6.ext

Instead of typing each filename at the Backup File List prompt, you could type:

```
Enter FILENAMES (press <Enter> for
directory):TEST?.EXT
```

SY-TOS would select all of the above files.

The * indicates that any character may occupy its position or any remaining positions. You may use the * in a filename or in its extension. For example, suppose you had the following list of files that you wanted SY-TOS to back up:

test.txt	test01.txt
tests.txt	testa.doc
test2	testn2.txt

Instead of typing each filename, you could type:

```
Enter FILENAMES (press <Enter> for
directory):TEST*.*
```

SY-TOS would select all of the above files.

Tree Structured Directories

DOS organizes files in a tree structured set of directories. Tree structured directories are useful for organizing large numbers of files, similar to the way a company has various departments and various jobs under those departments. Top directories name general categories while subsequent directories are more specific.

For example, company ABC has two divisions: sales and finance. Using one computer, they might set up a tree structure of directories as shown in Figure 3-4.

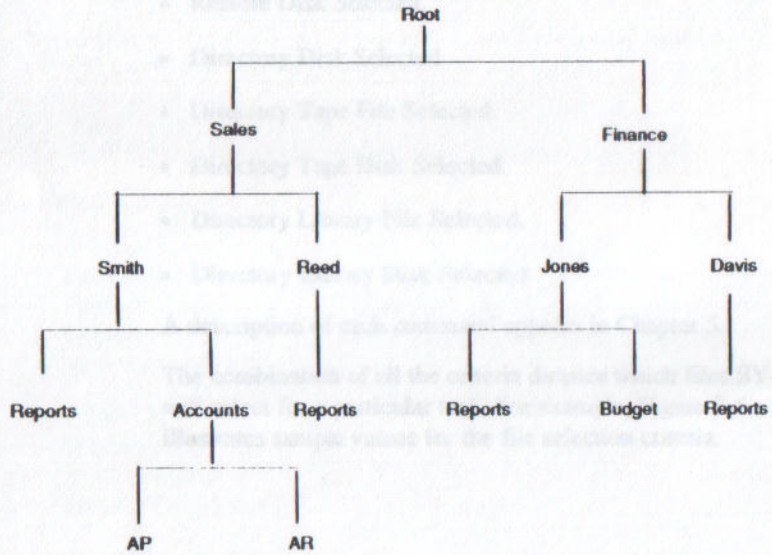

Figure 3-4 Example of a Tree Structure of Directories

In Figure 3-4, the top directory is called **root**, which is represented by the backslash (\) in DOS. A root directory may contain names of files and/or names of other directories. Each DOS disk or DOS disk partition has one root directory.

The other directories are referred to as subdirectories. Subdirectories may also hold both files and other subdirectories. A root directory and its subdirectories make up a tree structure.

Pathnames

When specifying a file, you must specify where to locate it. This is necessary because of the many paths available in tree structured directories. A *pathname* refers to a path of directory names that must be followed to find a particular file. The pathname you enter must be exactly as it appears on the disk.

Using Figure 3-4 as an example, if you wish to access all files within the Accounts directory during a Backup File List operation, you would specify the path to be:

```
Enter FILENAMES (press <Enter> for
directory):\SALES\SMITH\ACCOUNTS\*.*
```

You may look at the information in the DISK window to see how complete a pathname you need to specify when backing up files. The DISK window displays the current DOS disk and path.

Selecting Files

When using the Backup, Verify, Restore and Directory commands, it is often convenient to be able to selectively specify different files and conditions to consider when choosing these files. The Select commands are available for this type of specification. We refer to them as *file selection criteria*. You specify file selection criteria either from the Select commands in the ST-CONFIG utility or from the Set Select commands in the Advanced menu system.

The following are the file selection criteria that you can establish for SY-TOS to consider when selecting files:

- Include specified files.
- Exclude specified files.
- Consider only files that have changed since the last backup.
- Use a specified date to select files.
- Include files within subdirectories.
- Consider one or all tape backup sessions.

How Does File Selection Work?

SY-TOS uses the file selection criteria to select different files and conditions which are applicable to a specific task. Before SY-TOS backs up, restores, verifies or displays a directory of preselected files, it reviews the file selection criteria that you have specified. These criteria only apply to the following file-by-file Selected commands:

- Backup File Selected.
- Verify File Selected.
- Restore File Selected.
- Restore Disk Selected.
- Directory Disk Selected.
- Directory Tape File Selected.
- Directory Tape Disk Selected.
- Directory Library File Selected.
- Directory Library Disk Selected.

A description of each command appears in Chapter 5.

The combination of all the criteria dictates which files SY-TOS will select for a particular task. For example, Figure 3-5 illustrates sample values for the file selection criteria.

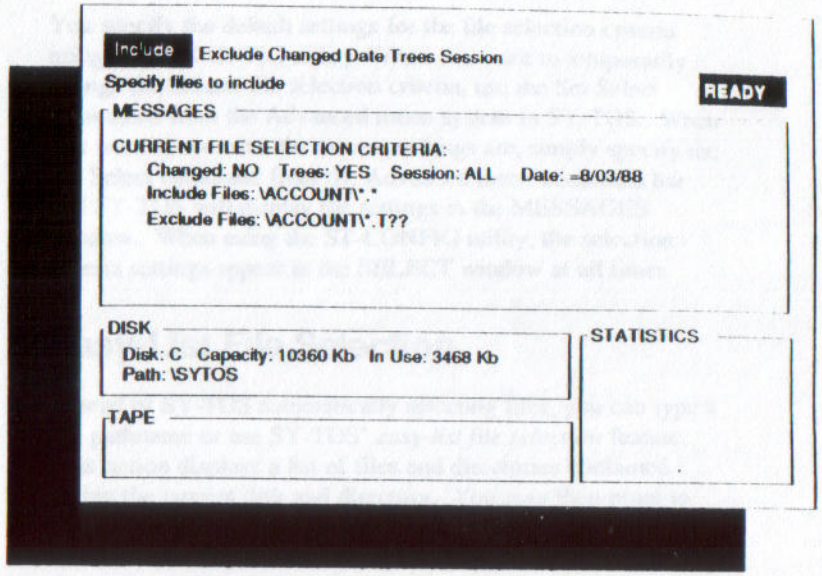

Figure 3-5 Sample Settings for Selection Criteria

Suppose you have the following DOS directory on your system as shown in Figure 3-6.

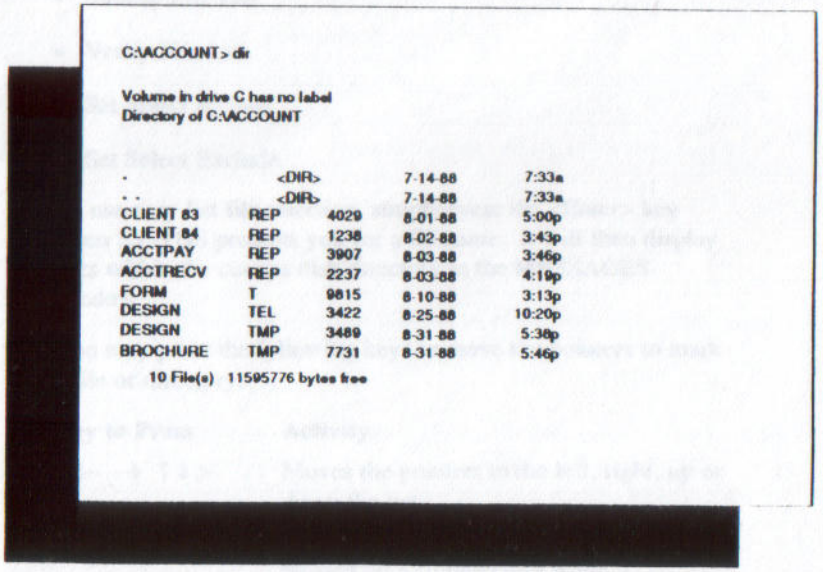
C:\ACCOUNT> dir
Volume in drive C has no label
Directory of C:\ACCOUNT
. <DIR> 7-14-88 7:33a
.. <DIR> 7-14-88 7:33a
CLIENT 83 REP 4029 8-01-88 5:00p
CLIENT 84 REP 1238 8-02-88 3:43p
ACCTPAY REP 3907 8-03-88 3:46p
ACCTRECV REP 2237 8-03-88 4:19p
FORM T 9815 8-10-88 3:13p
DESIGN TEL 3422 8-25-88 10:20p
DESIGN TMP 3489 8-31-88 5:36p
BROCHURE TMP 7731 8-31-88 5:46p
10 File(s) 11595776 bytes free

Figure 3-6 Sample DOS Directory

Using the criteria listed in Figure 3-5 to back up files, SY-TOS would select the files listed in Figure 3-7.

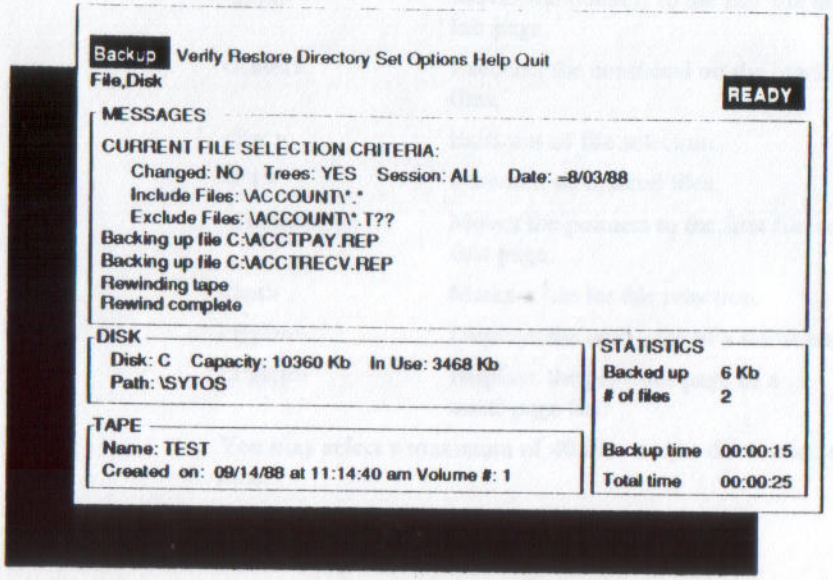

Figure 3-7 Files Selected

SY-TOS considers all of the file selection criteria before completing a specific task. In the above example, the Select Exclude command was set to exclude any files with a .T?? extension. Therefore, SY-TOS omitted the following files from the \ACCOUNT directory:

FORM.T
DESIGN.TEL
DESIGN.TMP
BROCHURE.TMP

In addition, the Select Date command was set to a specific date (8-03-88). Therefore, SY-TOS omitted the next set of files because their creation dates were not 8-03-88 even though they passed the Select Exclude criteria:

CLIENT83.REP
CLIENT84.REP

The remaining files in the \ACCOUNT directory met all of the file selection criteria and were backed up:

ACCTPAY.REP
ACCTRECV.REP

You specify the default settings for the file selection criteria using the ST-CONFIG utility. When you want to temporarily change the default file selection criteria, use the Set Select commands from the Advanced menu system in SY-TOS. When you want to see what the current settings are, simply specify the Set Select command from the Advanced menu command bar and SY-TOS will display the settings in the MESSAGES window. When using the ST-CONFIG utility, the selection criteria settings appear in the SELECT window at all times.

Easy-List File Selection

Instead of SY-TOS automatically selecting files, you can type a file pathname or use SY-TOS' *easy-list file selection* feature. This option displays a list of files and directories contained within the current disk and directory. You may then point to the files or directories you want and then mark them for selection. You may also move up and down through the directory structure and choose other subdirectories to scan.

You can use easy-list file selection with the following SY-TOS commands:

- Backup File List.
- Verify File List.
- Set Select Include.
- Set Select Exclude.

To use easy-list file selection, simply press the <Enter> key when SY-TOS prompts you for a filename. It will then display files within the current disk directory in the MESSAGES window.

You may press the following keys to move the pointers to mark a file or directory:

Key to Press	Activity
<← → ↑ ↓>	Moves the pointers to the left, right, up or down the list.
<Ctrl><PgDn>	Displays a subdirectory if the pointers are located on a subdirectory name.
<Ctrl><PgUp>	Displays the parent directory.

<Del>	Unmarks a file for file selection.
<End>	Moves the pointers to the last file on the last page.
<Enter>	Executes the command on the marked files.
<Esc>	Exits out of file selection.
<F1>	Unmarks all marked files.
<Home>	Moves the pointers to the first file on the first page.
<Ins>	Marks a file for file selection.
<PgDn>	Displays the next page of a multi-page list.
<PgUp>	Displays the previous page of a multi-page list.

You may select a maximum of 40 files and/or directories at a time.

Chapter 4. Customizing the SY-TOS System

When you first execute SY-TOS, it assumes the default values specified in the ST-CONFIG utility. However, you can use the ST-CONFIG utility to change the settings. It is from the ST-CONFIG utility where you may permanently:

- Specify whether or not SY-TOS will be used on a network.
- Select SY-TOS' supplied options (such as choosing a menu system or selecting the color for the SY-TOS screens).
- Choose the file selection criteria that you want SY-TOS to consider when selecting files to back up, verify, restore and display.
- Establish a security system which will allow you to determine who can use SY-TOS on your system and which files may be accessed.

The next sections explain how to use the ST-CONFIG utility. The sections describe each command in the order it appears on the command bar. It gives step-by-step instructions on the choices you have to make.

Using the ST-CONFIG Utility

The ST-CONFIG utility gives you the opportunity to set various SY-TOS defaults. Each time you execute SY-TOS these defaults will be in effect.

You may temporarily change some default settings (such as file selection criteria) from the Advanced menu system. To permanently change the default settings, you need to use the ST-CONFIG utility.

To use the ST-CONFIG utility, make sure you are in the directory where the SY-TOS software is installed. Type

STCONFIG and press **<Enter>**.

After you press <Enter>, the ST-CONFIG display appears on the screen.

Figure 4-1 illustrates the screen display. The command settings may vary from those on your screen.

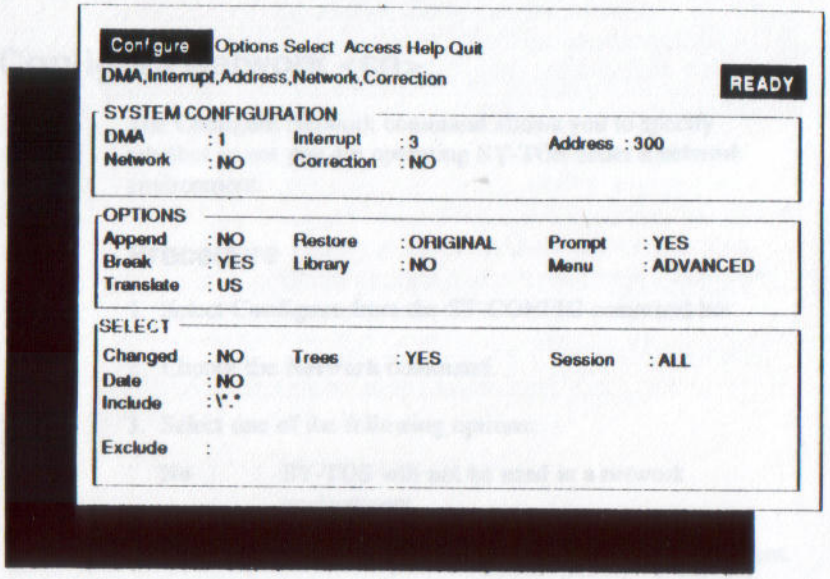

Figure 4-1 The ST-CONFIG Screen Display

The commands appear on the command bar at the top of your screen. You select them just as you would when using the Advanced menu system. (See Selecting a Command in Chapter 3 for more information.)

When a command requires additional information, ST-CONFIG prompts you for it on the first line on the screen.

As you change the settings for the Configure, Options and Select commands, ST-CONFIG updates the information displayed in the windows.

SPECIAL NOTE
Although DMA, Interrupt and Address also appear in the SYSTEM CONFIGURATION window, their values are pre-set at the factory and cannot be changed. Be sure that that hardware settings of other cards in your system (network cards or memory cards for example) do not conflict with these settings. Refer to your host adapter user manual to determine what these pre-set values are and what you should do if there is a conflict.

The word READY appears at the upper-right corner of the screen. This serves as an indicator which confirms that ST-CONFIG is ready to accept your commands. When ST-CONFIG needs additional information from you, it changes the indicator to INPUT. When you request help, the indicator changes to HELP.

The next sections describe the commands according to the order in which they appear on the command bar. The commands are: Configure, Options, Select, Access, Help and Quit. A tree structure showing each command and its subcommands appears at the beginning of each section. The letters that you can type to quickly select a command appear in angle brackets immediately following the command's name. This is provided to help you become more familiar with the method of simply typing command initials to quickly specify a ST-CONFIG operation. Refer to Appendix D for a complete picture of the ST-CONFIG utility's command tree structure.

Configure Network <cn>

The Configure Network command allows you to specify whether or not you are operating SY-TOS under a network environment.

Procedure

1. Select **Configure** from the ST-CONFIG command bar.
2. Choose the **Network** command.
3. Select one of the following options:

No	SY-TOS will not be used in a network environment.
Yes	SY-TOS will be used in a network environment.

The system updates the SYSTEM CONFIGURATION window to reflect the change.

NOTE
SY-TOS is designed to operate under a variety of networking environments. Refer to Appendix B for information about running SY-TOS under a network.

Options Commands

The Options commands enable you to select various system options that are available when performing SY-TOS operations. For example, you can request SY-TOS to prompt before restoring over information on the disk. In addition, you can specify which menu system you want to use and the colors for the SY-TOS screens.

Like the other commands in the ST-CONFIG utility, the Options commands come with default settings. You will want to check these to see if they are the correct ones for you. The following Options commands are also available from the Advanced menu system:

- Options Append.
- Options Restore.
- Options Prompt.
- Options Break.
- Options Library.

When you change an Options command from the Advanced menu system, its new value is in effect only for the duration of a SY-TOS session. Upon exiting the system, the values in the ST-CONFIG utility are in effect for the next SY-TOS session.

Options Append <oa>

With the Options Append command, you can instruct SY-TOS to place backed up information after the information currently on tape or to overwrite any information on the tape.

Procedure

1. Select **Options** from the ST-CONFIG command bar.

2. Choose the **Append** command.

3. Choose one of the following options:

No	SY-TOS will start backing up information at the beginning of the tape, overwriting any existing information on the tape after receiving confirmation. SY-TOS will prompt you for a volume name and password each time you back up.
Yes	SY-TOS will automatically append backups to the current tape. It will NOT prompt you for a volume name. If the tape has not been initialized to the system, you should select the Set Tape Create command in order to give it a name and an optional password before backing up.

Once you have selected an option, ST-CONFIG updates the OPTIONS window to reflect the change.

Options Restore <or>

With the Options Restore command, you can instruct SY-TOS to restore files to their original pathnames or to a new location when using the Restore File List and Selected or the Restore Disk List and Selected commands.

Procedure

1. Select **Options** from the ST-CONFIG command bar.

2. Choose the **Restore** command.

3. Choose one of the following options:

New	To restore files to disk according to the current disk and path as displayed in the DISK window in SY-TOS. SY-TOS will ignore the specified disk and pathnames on the backup tape, unless it is a DOS Disk backup on tape.
Original	To restore files to disk according to the original disk and pathnames from which the files were backed up, regardless of the current disk and path displayed in the DISK window in SY-TOS.

Once you select an option, ST-CONFIG updates the OPTIONS window to reflect the change.

CAUTION

- When using the Restore Disk List or Selected commands with Options Restore set to Original, SY-TOS will always restore the files to their original pathnames on the *current disk as displayed in the DISK window, regardless of the disk associated with the file(s) on tape.* SY-TOS will create the subdirectories when necessary.

- The setting for the Options Restore command does not affect a Restore Disk Entire operation. When you choose the Restore Disk Entire command, SY-TOS will prompt you for the disk where you want to place the information. At this point, you can specify a different disk. (See the Restore Disk Entire command section in Chapter 5 for more information.)

Options Prompt <op>

With the Options Prompt command, you can instruct SY-TOS to prompt you for confirmation before it overwrites system, changed or read-only files on disk during a restore operation.

Procedure

1. Select **Options** from the ST-CONFIG command bar.

2. Choose the **Prompt** command.

3. Choose one of the following options:

No	SY-TOS will automatically restore over system, changed or read-only files on disk with the corresponding files on tape.
Yes	SY-TOS will prompt you before restoring over system, changed or read-only files on disk.

Once you have selected an option, ST-CONFIG updates the OPTIONS window to reflect the change.

Options Break <ob>

With the Options Break command, you can specify whether or not pressing the <Ctrl> <Break> or <Ctrl> <C> key combinations will interrupt a SY-TOS activity.

Procedure

1. Select **Options** from the ST-CONFIG command bar.
2. Choose the **Break** command.
3. Choose one of the following options:

No	SY-TOS will not allow the <Ctrl> <Break> or <Ctrl> <C> key combinations to interrupt an activity. This option is useful when a series of SY-TOS tasks are performed while unattended.
Yes	SY-TOS will allow the <Ctrl> <Break> or <Ctrl> <C> key combinations to interrupt an activity. This option is useful when you accidentally request an undesired task.

Once you select an option, ST-CONFIG updates the OPTIONS window to reflect the change.

Options Library Active <ola>

With the Options Library command, you can open and close the SY-TOS Library.

SY-TOS gives you the opportunity to keep track of all files and disks that you back up as well as each tape's volume name. It stores this information in a disk file. When using SY-TOS, you can select the Directory Library commands to view the Library. The Library must be open in order to view its contents. If the security system is on, you will be able to view only the Library file assigned to you by the System Administrator.

Procedure

1. Select **Options Library** from the ST-CONFIG command bar.
2. Choose the **Active** command.
3. Choose one of the following options:

No	The Library will be closed. SY-TOS will not keep track of any new tapes that are initialized, existing tapes when re-initialized, or additional backups to a tape currently in the Library. This option is useful when you are creating or updating tapes that will be used at a different location.
Yes	The Library will be opened. When you open the Library for the first time, SY-TOS creates a \STLIB directory. It places this directory in the root directory on the disk you specify using the Options Library Disk command. SY-TOS places the Library files in the \STLIB directory. Make sure you have enough disk space to allow SY-TOS to store the Library files. Removing this directory will delete the Library's contents.

The system updates the OPTIONS window to reflect the change.

NOTES

- When you want to update the Library, you can select the Options Library Update command from the Advanced menu system. This command allows you to add SY-TOS tapes to the Library. You may then view its contents at any time by using the Directory Library commands.
- When the Library is open during a file-by-file backup operation, SY-TOS updates the Library files. You will therefore receive a message stating that these files are active when verifying.

Options Library Disk <old>

With the Options Library Disk command, you can specify the disk where SY-TOS will store the Library information.

Procedure

1. Select **Options Library** from the ST-CONFIG command bar.

Contents	The display area within each window.
Border	The double lined border surrounding each windowed area.

Titles	The heading name for each windowed area.
Selected	The current command on the command bar.
Unselected	The alternate commands on the command bar as well as subcommands.
Messages	Any message or prompt appearing on the screen outside a windowed area. In addition, this includes the last line on the screen where the program name, and system date and time appear.

Procedure

1. Select **Options** from the ST-CONFIG command bar.

2. Choose the **Color** command.

3. Select the part of the screen whose color you want to change.

   The system displays the available colors in the COLOR PALETTE window. You can choose colors for the foreground and background of the screen. A blinking asterisk points to your location in the COLOR PALETTE. The Foreground and Background color descriptions in the COLOR SELECTED window reflect the blinking asterisk's location.

   The colored asterisks represent the available colors for the foreground. The colored bars represent the available colors for the background.

4. Press the <→> and <←> keys to select the color you want for the foreground.

   The Foreground color name will change to reflect where you are in the color palette.

5. Press the < ↑ > and < ↓ > keys to select the color you want for the background.

   The Background color name will change to reflect where you are in the color palette.

NOTE
Up to this point, you can press <Esc> to cancel the color selection command.

6. When you have selected the colors for the foreground and background, press <**Enter**>.

   The colors you have selected for the specified part of the screen are in immediate effect.

7. Select another part of the screen whose color you want to change or press the <**F1**> function key to return to the ST-CONFIG command bar.

When you have finished selecting screen colors, the system returns you to the command bar and the screen will appear in the colors you have chosen.

Select Commands

With the Select commands in the ST-CONFIG utility, you can specify criteria for SY-TOS to consider when selecting files to back up, verify, restore or display.

Each time you request SY-TOS to back up, verify, restore or display preselected files, it reviews each file criterion before selecting the files. For an example of how the file selection criteria work, see the Selecting Files section in Chapter 3.

When you want to use different selection criteria for just one SY-TOS session, you can use the Set Select commands in SY-TOS to reset the criteria values. SY-TOS will then use the new values when selecting files for the duration of the current SY-TOS session. Once you exit SY-TOS, the default file selection values in the ST-CONFIG utility are in effect. If you want to permanently change the criteria SY-TOS uses to select files, simply change them in the ST-CONFIG utility.

The file selection criteria are only considered when you choose the following SY-TOS commands:

- Backup File Selected.
- Verify File Selected.
- Restore File Selected.
- Restore Disk Selected.
- Directory Disk Selected.
- Directory Tape File Selected.
- Directory Tape Disk Selected.
- Directory Library File Selected.
- Directory Library Disk Selected.

The SELECT window displays a list of the current file selection criteria values. Figure 4-2 shows the SELECT window with sample default settings.

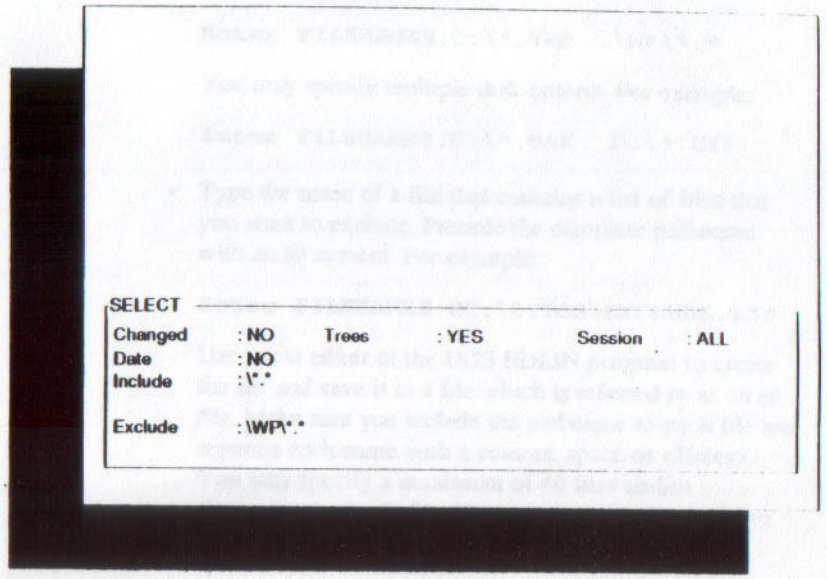

Figure 4-2 An Example of the SELECT Window

Select Include <si>

With the Select Include command, you can instruct SY-TOS to include certain files during its file selection process.

Procedure

1. Choose **Select** from the ST-CONFIG command bar.
2. Select the **Include** command.

   The system displays the following prompt:

   ```
   Enter FILENAMES:
   ```

3. You have the following choices:

   - Type the files that you want SY-TOS to consider and press <**Enter**>. You may enter a maximum of 80 characters. For example:

```
Enter FILENAMES:C:\SYTOS.EXE
C:\NEW\FILES.DOC
```

You may specify multiple disk criteria. For example:

```
Enter FILENAMES:C:\*.*   D:\*.*
```

- Type the name of a file that contains a list of files that you want to include. Precede the complete pathname with an @ symbol. For example:

```
Enter FILENAMES:@C:\SYTOS\INCLUDE.LST
```

Use a text editor or the DOS EDLIN program to create the list and save it in a file which is referred to as an @ *file*. Make sure you include the pathname to the files and separate each name with a comma, space or <Enter>. You may specify a maximum of 40 files and/or directories in the @ file. To include more files refer to Example 4 in Chapters 6 and 7.

NOTE
The @ file must exist before you specify it in this command.

ST-CONFIG updates the SELECT window to reflect the new Include criteria.

Select Exclude <se>

With the Select Exclude command, you can instruct SY-TOS to exclude certain files during its file selection process.

Procedure

1. Choose **Select** from the ST-CONFIG command bar.
2. Select the **Exclude** command.

   The system displays the following prompt:

   ```
   Enter FILENAMES:
   ```

3. You have the following choices:

- Type the files that you want SY-TOS to exclude and press <Enter>. You may enter a maximum of 80 characters. For example:

```
Enter FILENAMES:C:\*.TMP   \WP\*.*
```

You may specify multiple disk criteria. For example:

```
Enter FILENAMES:C:\*.BAK   D:\*.CIF
```

- Type the name of a file that contains a list of files that you want to exclude. Precede the complete pathname with an @ symbol. For example:

```
Enter FILENAMES:@C:\SYTOS\EXCLUDE.LST
```

Use a text editor or the DOS EDLIN program to create the list and save it in a file which is referred to as an @ *file*. Make sure you include the pathname to each file and separate each name with a comma, space or <Enter>. You may specify a maximum of 40 files and/or directories in the @ file. To exclude more files refer to Example 4 in Chapters 6 and 7.

NOTE
The @ file must exist before you specify it in this command.

ST-CONFIG updates the SELECT window to reflect the new Exclude criteria.

Select Changed <sc>

With the Select Changed command, you can instruct SY-TOS to consider all files or only those which have changed or have been created since the last backup session. Select Changed only applies as a file selection criterion during Backup File Selected and Directory Disk Selected operations.

When using the Directory Disk Selected command, you may choose either the Set or Keep options to view the files on disk which have changed or have been created since the last backup. Selecting Set in this instance will not change the files status to unmodified.

Procedure

1. Choose **Select** from the ST-CONFIG command bar.
2. Select the **Changed** command.
3. Select one of the following options:

   No SY-TOS will consider all files, regardless of whether they have changed or have been created since the last backup.

   Set SY-TOS will consider only those files which have changed or have been created since the last backup and will reset their file status to unmodified. SY-TOS will not consider those files again until they have changed.

   Keep SY-TOS will consider only those files which have changed or have been created since the last backup, but will keep the current changed file status. This option is useful when you want to create more than one backup tape containing the same updated files.

After you make a selection, ST-CONFIG will update the SELECT window to reflect the change.

Select Date <sd>

With the Select Date command, you can instruct SY-TOS to consider all files or only those created on, before or after a specific date.

Procedure

1. Choose **Select** from the ST-CONFIG command bar.
2. Select the **Date** command.
3. Select one of the following options:

   No SY-TOS will not use a file's creation date when determining which files to select.

   After SY-TOS will consider files created on or after a specified date.

   Before SY-TOS will consider files created on or before a specified date.

   Equal SY-TOS will consider files that have a specific creation date.

   When you select the After, Before or Equal options, ST-CONFIG displays the following prompt:

   ```
   Enter DATE for file selection:
   ```

4. Type the date that you want SY-TOS to use when considering files for file selection. Use the MM/DD/YY or MM-DD-YY format when entering the date.

   To accept the default value (the current date), press <Enter>.

   NOTE
   If the COUNTRY command in the DOS CONFIG.SYS file has been set, you will need to specify that country's date format. For example, if the country code is set to 033 (France), you will need to use the DD/MM/YY or DD-MM-YY date format.

After you have selected one of the Date options, ST-CONFIG updates the SELECT window to reflect the change.

Select Trees <st>

With the Select Trees command, you can instruct SY-TOS to search down subdirectories when it selects files or to consider only those files within a specific directory.

Procedure

1. Choose **Select** from the ST-CONFIG command bar.
2. Select the **Trees** command.
3. Select one of the following options:

   No SY-TOS will omit subdirectories when it selects files. This option is useful when you want to isolate the files within a directory without including files within subdirectories.

Yes SY-TOS will search down subdirectories when it selects files. This option is useful when you want to include all files within a disk.

After you have made a selection, ST-CONFIG updates the SELECT window to reflect the change.

Select Session <ss>

With the Select Session command, you can instruct SY-TOS to search for files in all tape backup sessions or only in one specific backup session when it verifies, restores or displays files.

Each time you back up files to a tape using the *Backup File List* or *Backup File Selected* commands, SY-TOS records it as a session. A tape may contain one session if Options Append were set to No or many sessions if Options Append were set to Yes. Recording sessions is helpful when you place several backup sessions on the same tape and then want to verify, restore or view a particular session using the Verify File Selected, Restore File Selected or Directory Tape File Selected commands.

SPECIAL NOTE
The Session command only pertains to file-by-file backup operations. You cannot use Session as a selection criterion for any List, DOS Disk or Device operations.

Procedure

1. Choose **Select** from the ST-CONFIG command bar.
2. Select the **Session** command.
3. Select one of the following options:

   All SY-TOS will search all file backup sessions when selecting files to verify, restore and display.

   Specific SY-TOS will search a specific file backup session when selecting files to verify, restore and display.

   ST-CONFIG will display the following prompt:

   ```
   Enter SESSION number:
   ```

4. Type the session number (a maximum of 255) that you want SY-TOS to search and press **<Enter>**.

After you have selected an option, ST-CONFIG updates the SELECT window to reflect the change.

NOTE
The Select Session command works in conjunction with the Options Append command. If Options Append is set to Yes, then more than one backup session can reside on a tape. When Options Append is set to No, only one backup session may exist on a tape.

Configure Options Select Access Help Quit

Active User Remove

No Yes View Add Change Delete

Access Commands

The ST-CONFIG utility allows you to create and maintain a security system which restricts users within the SY-TOS system to files specified in their access paths.

When creating a security system, you must first establish a System Administrator. Once you identify the System Administrator, only he/she can maintain the security system by selecting the Active, User and Remove commands to disable, modify or remove it.

The security system consists of the following information for each user:

Username	The name the user must specify before accessing SY-TOS or the ST-CONFIG and ST-BATCH utilities.
Password	The password the user must specify before entering SY-TOS or the ST-CONFIG and ST-BATCH utilities.
Access Path	The disks, directories or files that this user can access.
Library	The name for the Library file associated with this user. SY-TOS records the user's backup activities in this file.

The ST-CONFIG utility stores this information in a security file. When a security system has been created, but the security file has been deleted, you will need to re-install SY-TOS.

Access Active <aa>

The Access Active command allows you to turn on and off the security system. If the security system has not been created, ST-CONFIG will create it when you select the Yes option.

Procedure

1. Select **Access** from the ST-CONFIG command bar.

2. Choose the **Active** command.

3. Select one of the following options:

   No — Disables the security system. When you disable the security system, any user can access SY-TOS and the ST-CONFIG and ST-BATCH utilities.

   Yes — Enables the security system. If it has not been created, ST-CONFIG will create it at this time.

   When you select the Yes option, ST-CONFIG displays the following prompt:

   ```
   Enter Administrator's NAME:
   ```

4. Type the System Administrator's username (a maximum of 20 characters) and press **<Enter>**.

   The system displays the next prompt:

   ```
   Enter Administrator's PASSWORD:
   ```

5. Type the password for the System Administrator (a maximum of 5 characters) and press **<Enter>**.

   NOTE
   The system does not display the password. An X will appear for each letter you type. This is to ensure maximum security.

   If you are creating a security system, ST-CONFIG will display the password confirmation prompt.

   ```
   Re-Enter Administrator's PASSWORD:
   ```

6. Retype the password and press **<Enter>**.

If the password you just typed is incorrect, ST-CONFIG informs you and redisplays the password prompt. You will need to repeat steps 5 and 6.

NOTES

- By default, the System Administrator's access path is ***.*** and the Library file is called **admin.lbr**.
- Because the System Administrator is the only user who can change, disable or remove the security system, we strongly recommend that you record the System Administrator's name and password and keep it in a secure place. If the System Administrator's name and/or password are forgotten, no one will be able to select the Access commands to modify the security system.
- Once a security system has been activated, each user will be prompted for a name and password before being allowed access to the ST-CONFIG and ST-BATCH utilities or SY-TOS. The system will not display the actual password a user enters. An X will appear for each letter that is typed. Only the System Administrator will be allowed to select the Access commands.

Access User View <auv>

The Access User View command allows the System Administrator to display a list of users in the security system and select a username whose security information he/she wishes to see.

Procedure

1. Select **Access User** from the ST-CONFIG command bar.
2. Choose the **View** command.

   The system displays a list of users who can access SY-TOS in the top window. Two symbols point to the first name. That user's security information appears in the USER INFORMATION window.
3. Press the **arrow keys**, **<PgDn>**, **<PgUp>**, **<End>** or **<Home>** keys to point to other names.

   NOTE
   As you move the pointers from name to name, ST-CONFIG displays the security information for that user in the USER INFORMATION window.

When you are through viewing the security system, press **<Esc>** or **<Enter>** to return to the command bar.

Access User Add <aua>

The Access User Add command allows the System Administrator to add a user to the security system.

Procedure

1. Select **Access User** from the ST-CONFIG command bar.
2. Choose the **Add** command.

   The system displays the following prompt:

   ```
   Enter USERNAME:
   ```
3. Type the username (a maximum of 20 characters) that you want to add to the system security and then press **<Enter>**.

   The system displays the name you typed in the USER INFORMATION window and then displays the next prompt.

   ```
   Enter User PASSWORD:
   ```
4. Type the password (a maximum of 5 characters) for this user and press **<Enter>**.

   The system displays the password in the USER INFORMATION window and then displays the following prompt:

   ```
   Enter User PATH:
   ```
5. Type the disk path that you will allow for this user and press **<Enter>**. The path can be a maximum of 64 characters and you may use the DOS wildcards.

   The following examples show the paths that you may use:

Path	Access to
.	All disks and directories defined to the system.
C:	The C hard disk. The user will have the ability to back up multiple partitions that may exist on this disk by using the Options Device commands.
C:\	The C disk DOS partition only. The user has the ability to back up a DOS disk on C only. The user cannot perform multiple partition backups with this path.
C:\SYTOS\	The SYTOS directory located on the C disk and all subdirectories contained within the SYTOS directory. The user cannot access any other directory on the C disk.
C:\SYTOS\ET.EXE	The ET.EXE program in the SYTOS directory on the C disk. This is the only file that the user can access through SY-TOS.

After you specify the path, ST-CONFIG updates the USER INFORMATION window and displays the following prompt:

```
Enter User Library NAME: SYTOS
```

6. You have two choices:

   - To accept the default value, press <Enter>.
   - Type a name for the Library file (a maximum of 8 characters) and press <Enter>.

   The Library file will contain a listing of all tapes a user creates and the contents of these tapes. The System Administrator can assign each user a separate file or a single one for several users. For example, all users in the accounting department could share the common Library file called ACCT.

   When the user executes SY-TOS, he/she can only view the Library file associated with his/her username. SY-TOS will place information in Library files only when the Library is open. You open the Library from the Options Library Active command either in the ST-CONFIG utility or in the Advanced menu system.

   The Library name you specify will appear in the USER INFORMATION window. ST-CONFIG places the Library file in the \STLIB directory.

After specifying the Library name, the system displays the command bar.

Access User Change <auc>

The Access User Change command allows the System Administrator to edit user information in the security system.

Procedure

1. Select **Access User** from the ST-CONFIG command bar.
2. Choose the **Change** command.

   The system displays the following prompt:

   ```
   Enter name to change (or <Enter> for
   list):
   ```

3. You have two choices:

   - Type the username whose security information you want to change and then press <Enter>.
   - Press <Enter> to display a list of users in the top window. You can press the **arrow keys**, <PgDn>, <PgUp>, <Home> or <End> keys to point to the user whose security information you want to change and then press <Enter>.

     NOTE
     As you move the pointers from name to name, ST-CONFIG displays the security information for that user in the USER INFORMATION window.

   After you specify the username, the system displays the following prompt:

   ```
   Enter USERNAME:
   ```

4. To make any changes, type the new information at the prompt and press <Enter>.

   To keep the existing information, press <Enter>.

   ST-CONFIG prompts you for the password.

5. Type the new password and press <Enter>.

   To keep the current password, press <Enter>.

   ST-CONFIG prompts you for the disk, directory and file path that the user can access.

6. Type the new access path and press <Enter>.

   To keep the current access path, press <Enter>.

   ST-CONFIG prompts you for the Library file.

7. Type the name for the Library file and press <Enter>.

   To keep the current name, press <Enter>.

   ST-CONFIG displays the following prompt:

   ```
   Is all this information correct? (Y/N)
   [Y]
   ```

8. Press <Enter> to add the changes to the security system and return to the command bar.

   Type N and press <Enter> to cancel the information you just specified for this user.

After you make the necessary changes, ST-CONFIG redisplays the command bar.

Access User Delete <aud>

The Access User Delete command allows the System Administrator to remove a user from the security system.

Procedure

1. Select **Access User** from the ST-CONFIG command bar.

2. Choose the **Delete** command.

   The system displays the following prompt:

   ```
   Enter name to remove (or <Enter> for
   list):
   ```

3. You have two choices:

   - Type the username that you want to remove and then press <Enter>.

   - Press <Enter> to display a list of users in the top window. You can press the **arrow keys**, <PgDn>, <PgUp>, <Home> or <End> keys to point to the user you want to remove and then press <Enter>.

     NOTE
     As you move the pointers from name to name, ST-CONFIG displays the security information for that user in the USER INFORMATION window.

   After you specify a user to remove, the system displays the following prompt:

   ```
   Confirm. Do you wish to REMOVE this
   user? (Y/N) [N]
   ```

4. You have two choices:

   - Press <Enter> to keep the user in the security system and return to the command bar.

   - Type Y and press <Enter> to delete the specified user information from the security system.

   NOTES

   - When you remove a user from the security system, that user can no longer access SY-TOS or the ST-CONFIG and ST-BATCH utilities when the security system is activated.

   - You cannot remove the System Administrator's name from the security system. You may change the name with the Access User Change command or you may delete the entire security system by selecting the Access Remove command.

Access Remove <ar>

The Access Remove command permanently deletes the security information. Any user can access SY-TOS and its utilities as well as create a new security system.

Procedure

1. Select **Access** from the ST-CONFIG command bar.
2. Choose the **Remove** command.

   The system displays the following prompt:

   ```
   Do you wish to REMOVE the security
   system? (Y/N) [N]
   ```

3. Type **Y** and press **<Enter>** to remove the security system, or press **<Enter>** to keep it.

Help Command <h>

The Help command describes how to access contextual help in the ST-CONFIG utility.

To display the help text, follow these steps.

Procedure

1. Move the selection cursor to highlight the command in which you want help.
2. Press the **<F2>** function key.

   Help text pertaining to the highlighted command will appear in the MESSAGES window.

3. Press the **<PgDn>** or **<PgUp>** keys to view additional text when it exists.

   Press **<Esc>** to exit Help.

NOTES

- For additional help, you may also press the **<F2>** function key at a prompt. Help text explaining what ST-CONFIG expects you to enter will appear in the MESSAGES window.
- ST-CONFIG provides help text for error messages. When an error message appears on the third line of the screen, press the **<F2>** function key. Help text describing the error and a possible solution will appear in the MESSAGES window.

Quit Command <q>

Select the Quit command when you want to exit the ST-CONFIG utility.

The settings you specified for each command will always be in effect unless you temporarily change them in the Advanced menu system within SY-TOS.

Chapter 5. The Advanced Menu System Commands

This chapter contains step-by-step instructions on how to perform each SY-TOS task in the Advanced menu system. The chapter describes each command in the order it appears in the Advanced menu system. A tree structure showing each command and its subcommands appears at the beginning of each section.

The top line on the Advanced menu system displays a horizontal list of commands. We call this line the *Advanced menu command bar*. A list of subcommands appears below the highlighted command. When there are no more subcommands, a description appears.

The syntax for directly specifying SY-TOS commands at the DOS command prompt ("command line operation") appears in angle brackets immediately after the command's name. (For example, **Backup File List <bfl>**.) Chapter 6 explains command line operation.

You select commands in the Advanced menu system either by typing their initial letters as in the method presented above for command line operation, or by moving the selection cursor to highlight the command and then pressing the **<Enter>** key. The second selection method gives you the opportunity to scan the command trees. You may press the **<F2>** function key at any time to display a help message on the highlighted command. For more information about selecting commands, refer to Chapter 3.

If you are operating SY-TOS under a network environment, please refer to Appendix B in conjunction with the following sections. Appendix B describes special considerations which must be made when running SY-TOS under a network environment.

Backup Verify Restore Directory Set Options Help Quit

File Disk

List Selected

Backup Commands

The Backup commands allow you to copy information from a disk to a tape. By backing up, you can keep records of your files from years past, transfer data from one computer to another and free disk space.

Probably the most important reason for backing up is to ensure that data is not lost. When a hardware problem occurs and data is lost on your disk, you may retrieve it from the backup tape. However, the information backed up to tape is only as error free as it existed on the disk at the time of the backup. If there were problems with your disk, they may appear on the backup tape. *Therefore, it is advisable to perform a DOS CHKDSK operation prior to backing up data.* The CHKDSK command checks the disk for errors with the directories and the File Allocation Table. Although this may take a few extra seconds, it may save you weeks of trying to restore data that was damaged on the disk and therefore on the tape.

An Overview of Backup Operations

Before backing up files, you may want to check the settings for the Options commands since some of the settings may not be what you want. For example, the Options Append command determines whether or not SY-TOS appends information to a tape. The Options Break command allows you to interrupt a SY-TOS operation. Other Options commands allow you to keep track of the contents of backup tapes via a Library, and to maintain a Journal that records all messages that appear in the MESSAGES and STATISTICS window. The Journal information can either be stored in a disk file or can be logged to a printer.

You can determine what the Options settings are by selecting the Options command from the Advanced menu command bar. SY-TOS will then display the current settings in the MESSAGES window.

Each time you back up files to a tape using the Backup File List or Selected commands, SY-TOS assigns the backup a *session number*. Each time you back up a DOS disk using the Backup Disk or Options Device Backup command, SY-TOS assigns a *sequence number*. You may back up multiple sessions or sequences to the same tape if Options Append were set to Yes or only one if Options Append were set to No.

If a backup procedure fills a tape with information, SY-TOS will prompt you to insert as many tapes as needed to complete the backup. You may want to label the tapes so their order can be determined easily for future SY-TOS operations.

See Chapter 2 for more information about backup strategies.

The following are detailed descriptions explaining how to execute each Backup command.

Backup File List <bfl>

The Backup File List command allows you to copy specified files from disk to tape. When you choose this command, SY-TOS will disregard the file selection criteria.

You may enter specific filenames or mark files using SY-TOS' easy-list file selection feature. SY-TOS will back up only the designated files. If complete pathnames have not been specified, subdirectories will not be included even if Set Select Trees is set to Yes.

NOTES

- When backing up files for the first time to a new or erased tape with Append set to Yes, you should first use the Set Tape Create command to specify a tape volume name and an optional password.
- The Backup File List command is designed to back up files only. Therefore, this command will not back up an empty directory if it is at the bottom of a tree structure. (If its parent directory is also empty, it will not be backed up either.) If you wish to include these types of directories, use the Backup Disk command.

Procedure

1. Select **Backup File** from the Advanced menu command bar.

2. Choose the **List** command.

   The system displays the following prompt:

   ```
   Enter FILENAMES, (press <Enter> for
   directory):
   ```

3. You have three choices:

   - Type the filename(s) that you want to back up. You may enter a maximum of 80 characters. For example:

     ```
     Enter FILENAMES, (press <Enter> for
     directory):\*.EXE \SYTOS\*.BAT
     ```

   - Press <Enter> to display the contents of the current directory in the MESSAGES window and then select the files to back up by marking them. Refer to the Easy-List File Selection section in Chapter 3 for information on how to mark files.

   - Type the name of the file that contains the list of files you want to back up. Precede the complete pathname with an @ symbol. For example:

     ```
     Enter FILENAMES, (press <Enter> for
     directory):@C:\SYTOS\DAILY.LST
     ```

     Use a text editor or the DOS EDLIN program to create the list and save it in a file which is referred to as an @ *file*. Make sure you include the pathname to each file and separate each name with a comma, space or <Enter>. You may specify a maximum of 40 files and/or directories in the @ file. To include more files, refer to Example 4 in Chapters 6 and 7.

     NOTE
     The @ file must exist before you specify it in this command.

   If the Options Append command is set to Yes, SY-TOS will back up the specified files, placing them at the end of any existing information on the tape. You may then disregard the following steps.

   If the Options Append command is set to No, SY-TOS will display the following prompt:

   ```
   Enter a tape VOLUME NAME:
   ```

4. Type the name of the tape and press <Enter>. The name can have a maximum of 47 characters and can contain spaces.

   The system displays the next prompt:

   ```
   Enter optional tape PASSWORD, <Enter>
   if none:
   ```

   SPECIAL NOTE
   Passwords protect the tape against unauthorized access. Be sure to record the password in a safe, secure place because without the password, a tape cannot be accessed. You cannot remove a password without destroying the tape's contents.

5. If you do not wish to assign a password, simply press <Enter>.

   If you want to assign a password, type the password (a maximum of 19 characters) and press <Enter>.

   The system prompts you again.

   ```
   Re-enter PASSWORD to confirm:
   ```

6. Retype the password and press <Enter>.

   If the password you just typed is incorrect, SY-TOS informs you and redisplays the optional password prompt. You will then need to repeat steps 5 and 6.

   If the tape contains data, the system will display the following prompt:

   ```
   THIS TAPE CONTAINS DATA - Press <Enter>
   to  OVERWRITE, <Esc> to QUIT
   ```

7. Press either <Enter> to continue or <Esc> to stop the backup procedure.

   If you press <Enter>, SY-TOS will overwrite the existing information on tape.

It is recommended that you now select the Verify commands to ensure that the files on the tape correctly match the corresponding files on the disk.

Backup File Selected <bfs>

The Backup File Selected command copies preselected files from disk to tape. SY-TOS selects files to back up according to the file selection criteria specified either from the Select commands in the ST-CONFIG utility or from the Set Select commands in the Advanced menu system.

NOTE
The Backup File Selected command is designed to back up files only. Therefore, this command will not back up an empty directory if it is at the bottom of a tree structure. (If its parent directory is also empty, it will not be backed up either.) If you wish to include these types of directories, use the Backup Disk command.

Procedure

1. Before choosing the Backup File Selected command, make sure the file selection criteria are assigned the settings you want. Refer to the Select commands in Chapter 4 or in this chapter for information about setting the file selection criteria. Refer to Chapter 3 for an overview.

   To view the current file selection criteria, choose the Set Select command. SY-TOS will display the selection criteria in the MESSAGES window. You may change the criteria and then return to the Advanced menu command bar.

   NOTE
   When backing up files for the first time to a new or erased tape with Append set to Yes, you should first use the Set Tape Create command to specify a tape volume name and an optional password.

2. Select **Backup File** from the Advanced menu command bar.

3. Choose the **Selected** command.

   If the Options Append command is set to Yes, SY-TOS will back up the preselected files, placing them at the end of any existing information on the tape. You may then disregard the following steps.

   If the Options Append command is set to No, SY-TOS will display the following prompt:

   ```
   Enter a tape VOLUME NAME:
   ```

4. Type the name of the tape and press <Enter>. The name can be a maximum of 47 characters and can contain spaces.

   The system displays the next prompt:

   ```
   Enter optional tape PASSWORD, <Enter>
   if none:
   ```

   SPECIAL NOTE
   Passwords protect the tape against unauthorized access. Be sure to record the password in a safe, secure place because without the password, a tape cannot be accessed. You cannot remove a password without destroying the tape's contents.

5. If you do not wish to assign a password, simply press <Enter>.

   If you want to assign a password, type the password (a maximum of 19 characters) and press <Enter>.

   The system prompts you again.

   ```
   Re-enter PASSWORD to confirm:
   ```

6. Retype the password and press <Enter>.

   If the password you just typed is incorrect, SY-TOS informs you and redisplays the optional password prompt. You will then need to repeat steps 5 and 6.

   If the tape contains data, the system will display the following prompt:

   ```
   THIS TAPE CONTAINS DATA - Press <Enter>
   to OVERWRITE, <Esc> to QUIT
   ```

7. Press either <Enter> to continue or <Esc> to stop the backup procedure.

   If you press <Enter>, SY-TOS will overwrite the existing files.

It is recommended that you now select the Verify commands to ensure that the files on the tape correctly match the corresponding files on the disk.

Backup Disk <bd>

The Backup Disk command backs up the complete contents of a DOS disk partition. When you choose this command, SY-TOS will disregard the file selection criteria.

If you have used the ST-CONFIG utility to set Configure Network to Yes because you are running SY-TOS across a network, this command will not appear on the command bar.

NOTE
When backing up information for the first time to a new or erased tape with Append set to Yes, you should first use the Set Tape Create command to specify a tape volume name and an optional password.

Procedure

1. Select **Backup** from the Advanced menu command bar.

2. Choose the **Disk** command.

   SY-TOS displays the following prompt:

   ```
   Enter DISK letter(s) for a DOS DISK
   BACKUP:
   ```

3. Type the letter(s) followed by a colon that identifies the disk whose contents you want to back up to tape and press <Enter>. For example:

   ```
   Enter DISK letter(s) for a DOS DISK
   BACKUP:C:
   ```

   When more than one DOS disk partition is available on your computer system, you can back up more than one disk at the same time. Type both disk letters at the prompt and separate them with a space. For example:

   ```
   Enter DISK letter(s) for a DOS DISK
   BACKUP:C: D:
   ```

   If the Options Append command is set to Yes, SY-TOS will back up the specified disk(s), placing the information at the end of any existing information on the tape. You may then disregard the following steps.

   If the Options Append command is set to No, SY-TOS will display the following prompt:

   ```
   Enter a tape VOLUME NAME:
   ```

4. Type the name of the tape and press <Enter>. The name can be a maximum of 47 characters and can contain spaces.

   The system displays the next prompt:

   ```
   Enter optional tape PASSWORD, <Enter>
   if none:
   ```

   SPECIAL NOTE
   Passwords protect the tape against unauthorized access. Be sure to record the password in a safe, secure place because without the password, a tape cannot be accessed. You cannot remove a password without destroying the tape's contents.

5. If you do not wish to assign a password, simply press <Enter>.

   If you want to assign a password, type the password (a maximum of 19 characters) and press <Enter>.

   The system prompts you again.

   ```
   Re-enter PASSWORD to confirm:
   ```

6. Retype the password and press <Enter>.

   If the password you just typed is incorrect, SY-TOS informs you and redisplays the optional password prompt. You will then need to repeat steps 5 and 6.

   If the tape contains data, the system will display the following prompt:

   ```
   THIS TAPE CONTAINS DATA - Press <Enter>
   to  OVERWRITE, <Esc> to QUIT
   ```

7. Press either <Enter> to continue or <Esc> to stop the backup procedure.

   If you press <Enter>, SY-TOS will overwrite the existing files.

It is strongly recommended that you now select the Verify Disk command to ensure that the information on the tape correctly matches the information on the disk.

NOTES

- When SY-TOS backs up a disk, it backs up the information contained in that DOS disk partition. For example, suppose a 20 megabyte DOS hard disk partition contains only 5 megabytes of information and the remaining 15 megabytes are available. SY-TOS will back up only the 5 megabytes in use. Because SY-TOS does not back up unused disk space when using this command, backup time is reduced.
- When the Journal is open during a Backup Disk operation, SY-TOS updates the Journal file, thereby altering the information on the disk. Upon verifying the backup, you may receive an error message stating that certain blocks failed verification. We therefore recommend that you log to a printer or alternate disk during Disk backup and verify operations.

Backup Verify Restore Directory Set Options Help Quit

File Disk

List Selected

Verify Commands

The Verify commands allow you to confirm that SY-TOS correctly backed up on tape the files or disk you specified. When verifying files, SY-TOS scans the tape for the specified files and then compares them with the corresponding files on the disk. If you are verifying a disk, SY-TOS will compare the information on the tape with the information on the disk. It is strongly recommended that you use the Verify commands after each backup session to ensure the validity of the information on tape.

An Overview of Verify Operations

Each time you back up files to a tape, SY-TOS assigns a session number. A tape may contain one session if Options Append was set to No or many sessions if Options Append was set to Yes.

If you have multiple sessions on tape and would like to determine the number of the session you would like to verify, make sure the Set Select Session command is set to All and set the file selection criteria according to the information you want to verify. Then select either the Directory Tape File Selected or Directory Library File Selected command if the Library is open. SY-TOS will display the session numbers and the associated file information. You can then find the session you want to verify.

Once you have determined which session you want to verify, choose the Set Select Session Specific command and enter the desired session number. Then choose the Verify File Selected command; SY-TOS will only include that particular session when verifying the specified files. If the Set Select Session command is set to All and there is more than one session

residing on the tape, SY-TOS will verify all files that satisfy the selection criteria in each session on the tape from the first session consecutively through the last.

If you verify all backup sessions after appending information to a tape, any files that have been modified on the disk will fail verification when compared to older backup sessions. Therefore, you will probably want to verify only the most recent backup session using the Verify File Selected command with Set Select Session Specific equal to the number of this latest session (make sure Set Select Include is set to *.* and Trees is set to Yes), regardless of whether you performed a Backup File List or a Backup File Selected operation.

Each time you back up a DOS disk partition using the Backup Disk command, SY-TOS assigns it a sequence number (for example, C:1, C:2, D:1, D:2, D:3). When you verify a DOS Disk backup, you can specify the sequence number associated with it if more than one exists on the tape. You can see the sequence numbers that SY-TOS assigns each DOS Disk backup when you select the Directory Tape File Selected command with Set Select Include equal to *.* and Set Select Trees equal to Yes. To see a list of the DOS Disk backups on all tapes in the Library system, select the Directory Library Disk List or Selected command. The Library must be open in order to view its contents.

If the backup procedure filled more than one tape, you will need to insert the first tape before beginning the Verify operation. SY-TOS will then prompt you to insert the remaining tapes to be verified.

The following are detailed descriptions explaining how to execute each Verify command.

Verify File List <vfl>

The Verify File List command allows you to compare specific files on tape to the corresponding files on disk.

When you choose this command, SY-TOS will disregard all of the file selection criteria including the Set Select Session command. Since you cannot specify a session, SY-TOS will verify all occurrences of the specified file(s) on tape if more than one backup session exists on the tape. SY-TOS verifies information from the first session consecutively through the last.

You may enter specific filenames or mark files using SY-TOS' easy-list file selection feature. SY-TOS will verify only the designated files. If complete pathnames have not been specified, subdirectories will not be included even if Set Select Trees is set to Yes.

Procedure

1. Select **Verify File** from the Advanced menu command bar.
2. Choose the **List** command.

   The system displays the following prompt:

   ```
   Enter FILENAMES, (press <Enter> for
   directory):
   ```

3. You have three choices:

   - Type the filename(s) that you want to verify and press **<Enter>**. You may enter a maximum of 80 characters. For example:

     ```
     Enter FILENAMES, (press <Enter> for
     directory):\*.EXE \SYTOS\*.BAT
     ```

   - Press **<Enter>** to display the contents of the current directory in the MESSAGES window and then select the files by marking them. Refer to the Easy-List File Selection section in Chapter 3 for information on how to mark the files.

   - Type the name of a file that contains a list of files you want to verify. Precede the complete pathname with an @ symbol. For example:

     ```
     Enter FILENAMES, (press <Enter> for
     directory):@C:\SYTOS\DAILY.LST
     ```

     Use a text editor or the DOS EDLIN program to create the list and save it in a file which is referred to as an *@ file*. Make sure you include the pathname to each file and separate each name with a comma, space or <Enter>. You may specify a maximum of 40 files and/or directories in the @ file. To include more files refer to Example 4 in Chapters 6 and 7.

NOTE
The @ file must exist before you specify it in this command.

SY-TOS will notify you in the MESSAGES window whether the file(s) verified. If the verification failed, repeat the backup and verify it again. A verification will fail if files have changed on the disk since the last backup, if information was not correctly backed up to tape or if the tape has been damaged.

Verify File Selected <vfs>

The Verify File Selected command compares preselected files on tape to the corresponding files on disk. SY-TOS selects files to verify based on the file selection criteria specified from the Select commands in the ST-CONFIG utility or from the Set Select commands in the Advanced menu system.

Procedure

1. Before choosing the Verify File Selected command, make sure the file selection criteria are assigned the settings you want. Refer to the Select commands in Chapter 4 or in this chapter for information about setting the file selection criteria. Refer to Chapter 3 for an overview.

   To view the current file selection criteria, choose the Set Select command. SY-TOS will display the selection criteria in the MESSAGES window. You may change the criteria and then return to the Advanced menu command bar.

2. Select **Verify File** from the Advanced menu command bar.

3. Choose the **Selected** command.

SY-TOS will display the current file selection criteria in the MESSAGES window and will then verify the files based on those criteria.

SY-TOS will notify you in the MESSAGES window whether the files verified. If the verification failed, repeat the backup and verify it again. A verification will fail if files have changed on the disk since the last backup, if information was not correctly backed up to tape or if the tape has been damaged.

Verify Disk <vd>

The Verify Disk command compares the information placed on tape during a DOS Disk backup with the information on the disk. When you choose this command, SY-TOS will disregard the file selection criteria.

If you have used the ST-CONFIG utility to set Configure Network to Yes because you are running SY-TOS across a network, this command will not appear on the command bar.

Procedure

1. Select **Verify** from the Advanced menu command bar.

2. Choose the **Disk** command.

   The system displays the following prompt:

   ```
   Enter DISK letter(s) for a DOS DISK
   VERIFY:
   ```

3. Type the letter(s) followed by a colon that identifies the DOS Disk backup(s) whose contents you want to verify.

   If you specify different disks to verify, SY-TOS will switch disks when verifying the different DOS Disk backups. For example, suppose your current disk is C and you specified the following:

   ```
   Enter DISK letter(s) for a DOS DISK
   VERIFY:C: D:
   ```

   SY-TOS would first verify the C disk backup, then switch to drive D, update the DISK window and verify the D disk backup.

   You may also specify the DOS Disk backup sequence number to verify a specific backup when more than one exists on tape. For example:

   ```
   Enter DISK letter(s) for a DOS DISK
   VERIFY:C:1 D:2
   ```

SY-TOS will verify the first C Disk backup sequence and the second D Disk backup sequence.

SY-TOS will notify you in the MESSAGES window whether the disk verified. If the verification failed, repeat the DOS Disk backup and verify it again. A verification will fail if information has changed on the disk since the last backup, if information was not correctly backed up to tape or if the tape has been damaged.

NOTE
When the Journal is open during a Backup Disk operation, SY-TOS updates the Journal file, thereby altering the information on the disk. Upon verifying the backup, you may receive an error message stating that certain blocks failed verification. We therefore recommend that you log to a printer or alternate disk during Disk backup and verify operations.

Backup Verify Restore Directory Set Options Help Quit

File Disk

List Selected Entire List Selected

Restore Commands

The Restore commands give you the ability to copy information from a tape to a disk. The backup method used determines how you retrieve information from the tape. If a file-by-file backup exists on the tape, you would specify either the Restore File List or Restore File Selected command. If a DOS Disk backup resides on the tape, you would use the Restore Disk Entire command to retrieve the entire contents. However, you may select the Restore Disk List or Restore Disk Selected commands to retrieve individual files from a DOS Disk backup tape.

The manner in which information is restored is also dependent on the settings for various Options commands. For example, the Options Restore command determines whether information will be restored to its original disk and pathname or to a new location. The Options Prompt command allows you to specify whether or not SY-TOS will prompt you before overwriting system, changed or read-only files. You should check the settings for these commands before performing a Restore operation.

SPECIAL NOTE
Great care should be taken when restoring DOS system or program files to a hard disk which is running a different version of DOS than the version on tape. Certain utilities, CHKDSK.COM for example, are DOS version specific.

An Overview of Restore Operations

Each time you back up files using the Backup File List or Selected commands, SY-TOS assigns a session number. A tape may contain one session if Options Append were set to No or many sessions if Options Append were set to Yes.

Select **4** (the INTERACTIVE UNIX driver disk is 720K) and press ENTER. Your drive density selection is then confirmed and you are told to insert your floppy disk. You are then given instructions for installations requiring more than one floppy disk. After the instructions, you are given the opportunity to stop the installation procedures when the following prompt is displayed:

```
Strike ENTER when ready
or ESC to stop.
```

NOTE

You can press DEL to exit the installation procedure at any time. Using DEL to exit the install program kills the program and you return to the shell prompt.

Pressing ESC returns you to the shell prompt. The following prompt is displayed after you press ENTER:

```
Installation is in progress -- do not remove the floppy disk.
Install ZDS SCSI Host Adapter Driver? (y): y
```

Type **y** and press ENTER. The following messages are displayed:

```
Installing ZDS SCSI Host Adapter Driver.
(c) Copyright 1989,1990 Zenith Data Systems Corporation
     All Rights Reserved
Installing driver(s):  please wait
The following files are being installed:
/usr/include/sys/ziovec.h
/usr/include/sys/zscsi.h
/usr/include/sys/zsha.h
nn blocks
Floppy diskette number 1 is complete
Installation of ZDS SCSI Host Adapter Driver- is complete.
Install ZDS SCSI Sequential Access Driver? (y): y
```

Type **y** and press ENTER.

The following messages are displayed:

```
Installing ZDS SCSI Sequential Access Driver.
(c) Copyright 1989,1990 Zenith Data Systems Corporation
     All Rights Reserved
Installing driver(s):  please wait
The following files are being installed:
/usr/include/sys/zssa.h
nn blocks
Floppy diskette number 1 is complete
Root Directory (/):
```

Press ENTER after the `Root Directory` prompt. The following menu is displayed:

```
MAIN MENU

1)  CONFIGURE KERNEL
2)  BUILD A KERNEL
3)  INSTALL A KERNEL

Enter Choice [1-3, q]: x
```

If you wish to exit the installation procedure, type **q** and press ENTER. Otherwise, you should select **BUILD A KERNEL**. Type **2** and press ENTER. Several messages will be displayed on the screen informing you of the current status. The following prompt is then displayed:

```
Installing unix.nn will shut down the system.
Do you want to install unix.nn (y):
```

If you want to install the new kernel, type **y** and press ENTER. If you do not want to install the new kernel, type **n** and press ENTER. If you answer **n** to the prompt, you will return to **MAIN MENU**. If you answered **y**, the following prompt is displayed:

```
Enter the number of seconds for
shutdown user warning: nn
```

Entering a number and pressing ENTER begins the shutdown of the system.

The following message is displayed:

```
This procedure will execute a shutdown
to reboot the new kernel unix.nn.
Enter y to continue, n to terminate: y
```

After you answer **y**, a message is displayed informing you that the system shutdown has started. A message is sent from root to other users on the system telling them to log off or risk their files being damaged. You are then prompted with the following message:

```
Do you want to continue? (y or n): y
```

After you answer **y** and press ENTER, the following is displayed:

```
Installation of ZDS SCSI Sequential
Access Driver– is complete.
```

Installation of the ZDS SCSI Host Adapter and the ZDS SCSI Sequential Access Driver is now complete.

Removing Tape Backup from INTERACTIVE UNIX

The System Administration program is also used to remove a product or package from your system. Type **sysadm removepkg** and press ENTER. The following information is displayed:

```
/     : Disk space: 19.60MB of 31.99MB available (60.98%).
/usr  : Disk space: 13.70MB of 97.45MB available (14.06%).
/usr1 : Disk space: 61.52MB of 62.50MB available (98.43%).

Total Disk Space: 94.73MB of 191.95MB available (49.35%).


Running subcommand 'removepkg' from menu 'softwaremgt',
SOFTWARE MANAGEMENT
```

A list of all the software products currently on your system is displayed. The following prompt is displayed at the end of the list.

```
Select a number from this list to remove: nn
```


Enter the number of the product that you want to remove and then press ENTER. Select the ZDS SCSI Host Adapter Driver. The following messages are displayed:

```
Confirm

Do you really want to remove ZDS SCSI Host Adapter Driver?

Strike ENTER when ready
or ESC to stop.
```

Press ENTER and the following screen messages are displayed:

```
The following driver(s) is being removed:
     zsha
Removing ZDS SCSI Host Adapter Driver descriptions
from /etc/conf/kconfig.d/description
The following files are being removed:
/usr/include/sys/ziovec.h
/usr/include/sys/zscsi.h
/usr/include/sys/zsha.h
/usr/options/ha.name


The ZDS SCSI Host Adapter Driver is now removed.


Confirm

Do you want to remove another package?


Strike ENTER when ready
or ESC to stop.
```

Press ENTER and the list of software products currently on your system is displayed on the screen. At the prompt, select the ZDS SCSI Sequential Access Driver and press ENTER. The following messages are displayed:

```
Confirm

Do you really want to remove ZDS SCSI Sequential
Access Driver?
```

```
Strike ENTER when ready
or ESC to stop.
```

Press ENTER to remove the driver. The following messages are displayed:

```
The following driver(s) is being removed:
     zssa
Removing ZDS Sequential Access Driver descriptions
from /etc/conf/kconfig.d/description
The following files are being removed:
/usr/include/sys/zssa.h
/usr/options/ts.name


The ZDS SCSI Sequential Access Driver is now removed.


Confirm

Do you want to remove another package?

Strike ENTER when ready
or ESC to stop.
```

The Tape Backup System has been removed from the system. Press ESC to stop and you return to the system prompt.

Installing Tape Backup on SCO UNIX

The CUSTOM command is used to install the SCO UNIX tape backup driver. CUSTOM is executable only by the super-user. To begin installation, type **custom** and press ENTER. The CUSTOM main menu appears with the following options:

```
Install  Remove  List  Quit
```

To select an option, use the arrow keys to move the cursor to your selection and press ENTER. Select the `Install` option.

The `Install` option allows a product or system to be added. After selecting the `Install` option, a window appears in the lower-right corner of the screen. The options that appear in the window include: `A New Product` and a list of products that are currently installed on your system. Using the arrow keys, select `A New Product` and press ENTER.

After selecting `A New Product`, the following choices are displayed:

```
Choose an option: [Entire Product]  Packages  Files
```

Using the arrow keys, select `Entire Product` and press ENTER. The following prompt is displayed:

```
Insert the requested volume and press <RETURN> to
continue the installation.
```

Insert the disk containing the SCO UNIX tape backup driver and press ENTER to continue the installation. A message is displayed telling you that the system is `Installing custom data files`. Again, you will be prompted to insert the disk containing the tape backup driver, press ENTER to continue installation.

The following messages appear on the screen.

```
Extracting Files
Creating File Lists

Executing ZDS SCSI Tape Package Init Script

Installing ZDS SCSI Sequential Access Driver
Installing ZDS SCSI Host Adapter Driver
```

Press **y** and ENTER. The following prompt is displayed:

```
Do you wish to build a new kernel at this time? (y/n)
```

Press **y** and ENTER. The following messages are displayed:

```
    The UNIX Operating System will now be rebuilt.
    This will take a few minutes. Please wait.

    Root for this system build is /.

    The UNIX kernel has been rebuilt.
```

```
Do you want this kernel to boot by default? (y/n)
```

Press **y** and ENTER. The following messages are displayed:

```
Backing up /unix to /unix.old
Installing new /unix

The kernel environment includes device node files
and /etc/inittab.
The new kernel may require changes to /etc/inittab
or device nodes.
```

```
Do you want the kernel environment rebuilt? (y/n)
```

Press **y** and ENTER. The following messages are displayed:

```
The kernel has been successfully linked and installed.
    To activate it, reboot your system.

Setting up new kernel environment
Press any key to continue
```

When installation is complete, you return to CUSTOM's main menu. Select **Quit** and press ENTER to exit the custom installation program.

Reboot the computer to use the new kernel.

Removing Tape Backup from SCO UNIX

Use the CUSTOM command to remove a software product from your system. To begin removal, type **custom** and press ENTER. The CUSTOM main menu appears with the following options:

```
Install  Remove  List  Quit
```

To select an option, use the arrow keys to move the cursor to your selection and press ENTER. Select the **Remove** option.

The **Remove** option allows a product or system to be removed.

After selecting the **Remove** option, a window appears in the lower-right corner of the screen. The options that appear in the window include: a list of products that are currently installed on your system. Using the arrow keys, select **ZDS SCSI Tape Package** and press ENTER.

After selecting the ZDS SCSI Tape Package, the following choices are displayed:

```
Choose an option: [Entire Product]  Packages  Files
```

Select **Entire Product** and press ENTER. The following prompt is displayed:

```
Please verify the removal of the following packages.

ALL

Do you wish to continue?  [Yes]  No
```

Select **Yes** and the following messages are displayed:

```
Executing ZDS SCSI Tape Package Removal Script

Do you wish to remove the ZDS SCSI
Sequential Access Driver? (y/n)
```

Type **y** and press ENTER. The following prompt is displayed:

```
Removing the ZDS SCSI Sequential Access Driver
Do you wish to remove the ZDS SCSI Host
Adapter Driver? (y/n)
```

Type **y** and press ENTER. The following messages are displayed:

```
Removing the ZDS SCSI Host Adapter Driver
Do you wish to build a kernel at this time? (y/n)
```

Type **y** and ENTER. The following messages are displayed:

```
    The UNIX Operating System will now be rebuilt.
    This will take a few minutes. Please wait.

    Root for this system build is /.

    The UNIX kernel has been rebuilt.


Do you want this kernel to boot by default? (y/n)
```

Type **y** and press ENTER. The following messages are displayed:

```
Backing up /unix to /unix.old
Installing new /unix
The kernel environment includes device node files
and /etc/inittab.
The new kernel may require changes to /etc/inittab
or device nodes.

Do you want the kernel environment rebuilt? (y/n)
```

Press **y** and ENTER. The following messages are displayed:

```
The kernel has been successfully linked and installed.
     To activate it, reboot your system.

Setting up new kernel environment
Press any key to continue
```

After completing the removal of the Tape Backup System, you return to the main menu. Shutdown the computer and reboot to use the new kernel.

Chapter 2
Using Tape Backup

"Rewind on close" tape drives are accessed through files of the form /dev/rct/b*i*l*j*, where *i* is the bus id (BID) for the SCSI device and *j* is a logical unit (LUN). The "No rewind on close" tape drives are accessed through files of the form /dev/rct/b*i*l*j*n, where *i* is the BID and *j* is the LUN. The file /dev/nrct0 refers to the default no rewind on close tape drive. The file /dev/rct0 refers to the default rewind on close tape drive.

To rewind the tape in the tape drive, enter

```
< /dev/rct0
```

NOTE

The tape backup driver will be shipped with /dev/rct0 and /dev/nrct0 configured to point to the default BID and LUN for the hardware. The default BID is 3 and the default LUN is 0. If you have changed the BID and LUN, you must modify your /etc/conf/node.d/zssa file and run the command **/etc/conf/bin/idmknod**.

To place several archives on one tape or on a set of tapes, enter the following commands:

```
cd first directory
find . -print|sort|cpio -ovB >/dev/nrct0 -first archive

cd second directory
find . -print|sort|cpio -ovB >/dev/nrct0 -second archive
.
.
.
cd nth directory
find . -print|sort|cpio -ovB >/dev/rct0 -nth archive
```

where:

first directory	is the first directory you want to backup on a tape or set of tapes.
nth directory	the *nth* or last directory that you are backing up onto a tape or set of tapes.
first archive	the archive of the first directory you are backing up onto a tape or set of tapes.
nth archive	the archive of the *nth* directory you are backing up onto a tape or set of tapes.

The last backup command rewinds the tape after completing the backup:

To verify the backups, enter the following command to verify *each* backup.

```
cpio -itB </dev/nrct0 -first through (n-1)th archive
cpio -itB </dev/rct0 -nth archive
```

where:

(n-1)th archive	is the archive previous to the *nth* archive.
nth archive	is the archive of the *nth* or last directory that you are backing up onto a tape or set of tapes.

Chapter 3
Reference Section

The reference sections included are as follows:

- Zenith SCSI Host Adapter Driver
- Zenith SCSI tape (sequential access) driver – INTERACTIVE version
- Zenith SCSI tape (sequential access) driver – SCO version

NAME

zsha - Zenith SCSI Host Adapter Driver

DESCRIPTION

Zsha is the low level device driver used by all top level Zenith SCSI drivers. This module defines only the driver interrupt and initialization entry points (**zsha_intr()** and **zsha_init()**), and several more entry points used by the top level SCSI drivers (defined below). It defines a virtual interface to the Zenith SCSI Host Adapter. This allows multiple SCSI device drivers to access the same host adapter without interfering with one another.

INTERFACE DEFINITION

The structures, constants and other macros used to access this virtual interface are defined in *<sys/zsha.h>*, *<sys/zscsi.h>* and *<sys/ziovec.h>*. The entry points **zsha_start()**, **zsha_open()**, **zsha_close()**, **zsha_request()** and **zsha_abort()** provide access to the host adapter hardware. All of these routines take one argument, a pointer to the following structure, except for **zsha_start()**, which takes no arguments.

```
typedef struct zscsi_dev {
        unchar  state;          /* activity state */
        unchar  message;        /* single byte SCSI message */
        ushort  status;         /* low byte SCSI status, hi - driver
                                   status */
        ushort  cmd_len;        /* length of command at *cmd */
        ushort  offset;         /* byte offset from iovec start */
        unchar  *cmd;           /* the SCSI command */
        iovec_t *iovec;         /* vector of the physical memory
                                   segments */
        int     (*funcp)();     /* pointer to function returning
                                   int */
        struct zscsi_dev *devq_next;
} zscsi_dev_t;
```

Each **zscsi_dev** structure is for a particular logical SCSI device, and the following macros are available to convert from SCSI Bus Id and Logical Unit Number (bid and lun) to a device pointer and back to bid and lun.

zscsi_dev_t *GET_DEV(bid, lun) returns device pointer for a logical unit

int bid, lun;

zscsi_dev_t *GET_DEV1(bidlun) same as above, but with combined argument

int bidlun;

int DEV_TO_BIDLUN(devp) returns combined bid/lun for next two macros

zscsi_dev_t *devp;

int BID(bidlun) extracts bus id from combined argument

int bidlun;

int LUN(bidlun) extracts logical unit from combined argument

int bidlun;

int zsha_start()

The **zsha_start()** entry point is called by the start or init function of each driver using this interface. The first time it is called it attempts to initialize the hardware, and it will continue to return the same status (**TRUE** for success, **FALSE** for failure) when additional drivers call it.

int zsha_open(devp)
zscsi_dev_t *devp;

void zsha_close(devp)
zscsi_dev_t *devp;

Before accessing a SCSI device, the driver must reserve that device for itself by calling **zsha_open()** for that device, which returns **FALSE** only if the device is already reserved. The driver must also release the device with **zsha_close()** when it is done accessing the device. If the device has not been reserved with open, requests to that device will fail.

int zsha_request(devp)
zscsi_dev_t *devp;

Once the device has been opened, SCSI requests may be executed by calling "**zsha_request()**". The requester fills **devp->cmd** and

devp->cmd_len with a pointer to a SCSI command and its length, and also puts the appropriate identify message in **devp->message** if disconnect/reselect is allowed with this command. The driver also fills the **devp->funcp** field with a pointer to a function that will be called with the device pointer as an argument when the command is done.

The data area (whether being read or written) is communicated in the **devp->iovec** field, which is a pointer to an array of iovec structures:

```
typedef struct {
        ushort  iolen;
        paddr_t ioaddr;     /* physical address */
} iovec_t;
```

This allows the driver to scatter or gather the data for SCSI commands. The end of the array is indicated by an element with **devp->iolen** set to zero. The driver will pad the end of a write buffer or discard the end of a read buffer only if the last valid element (before the terminator) has **devp->ioaddr** set to zero. The iovec structure along with the following macros are defined in *<sys/ziovec.h>*:

int IOVEC_RESID(devp) Calculate amount of data not transferred. (only handles iovecs with 1 or 2 elements)
zscsi_dev_t *devp;

void BUILD_IOVEC(iovec, addr, count) Fill an iovec with at most one break at a 64k DMA boundary.
iovec_t *iovec;

caddr_t addr;
int count;

void BUILD_NULL_IOVEC(iovec) Fill an iovec for no data.
iovec_t *iovec;

The caller is responsible for blocking host adapter interrupts before calling "**zsha_request()**", and the macro "**SPL()**" is provided so interrupt level information can be isolated in this module. If the request was successfully queued, **zsha_request()** will return true, otherwise it returns false, although it should only fail when there is a serious problem with the host adapter. When the request has been processed, the function in **devp->funcp** is called, and its status can be found in the **devp->status** and possible **devp->message** fields. The **devp->iovec** and **devp->offset**

will have been updated so that **devp->iovec** points to the iovec element that is next to be transferred, and the **devp->offset** field indicates the number of bytes from that element already transferred. This information can be used to calculate how much data was actually transferred by the SCSI command.

These are the bit field definitions for "**devp->status**". The low byte is the byte transferred from the SCSI target during the last "status in" phase, and the high byte is designed specifically for this driver protocol, and the comments following their definition describes how they are used.

```
/* SCSI Status byte definitions */
#define STAT_RESVD    0x80    /* reserved for future standards */
#define STAT_VEND     0x61    /* these bits may have vendor
                                 specific meanings */
#define STAT_MASK     0x1e    /* this mask is used before
                                 comparing to the following status

codes */
#define STAT_GOOD     0x00
#define STAT_CHECK    0x02    /* check condition */
#define STAT_C_MET    0x04    /* condition met */
#define STAT_BUSY     0x08
#define STAT_INT_G    0x10    /* intermediate good (linked
                                 commands) */
#define STAT_I_C_MET 0x14     /* intermediate condition met */
#define STAT_R_CONF  0x18     /* Protocol definitions */
#define STAT_RESET    0x100   /* a SCSI bus reset has occurred */
#define STAT_NOPEN    0x200   /* true if no opens to this device */
#define STAT_MSG      0x400   /* true when structure holds a valid
                                 msg byte */
#define STAT_ERROR    0x800   /* true when an other type of error
                                 occurred */

#define STAT_OK(x)\
(((x) & (STAT_RESET|STAT_NOPEN|\
STAT_MSG|STAT_ERROR)) = =0)
```

The status field is made up of two independent status bytes, the low byte contains the last status byte returned by the SCSI target, and the high byte is used for communication between the two layers of the SCSI drivers (the host adapter module (HA) and the high level modules (HL, such as disk, tape, worm, etc.)) Generally these bits are set by the HA

module, and examined by the HL module. When appropriate action has been taken, the HL module clears the bit, but if there is no appropriate action it can take, it will leave the bit set, so the HA module knows to take clean up actions such as aborting the current command.

STAT_RESET is set by the host adapter module when a bus reset interrupt occurs, which causes the next or current request to fail. The device specific module is responsible for replacing any device information that may have become stale and then clearing the reset flag.

STAT_NOPEN is set and cleared by the host adapter open and close functions. This module guarantees that it will not move or re-use a device structure unless this flag is set. The device specific driver must call the host adapter close only when all opens to this dev/lun pair are closed (e.g. when all partitions on a disk are closed).

STAT_MSG is set when **devp->message** has a valid message byte.

STAT_ERROR is set when an error condition not covered by the other bits occurs. The error code will be in the message byte. See the E_ defines below for the set of possible error codes.

```
/* error codes (in devp->message when STAT_ERROR is set) */
#define E_STIMEOUT   1      /* Select timeout */
#define E_BADMSG     2      /* Bad message received */
#define E_ICMD       3      /* Illegal command intr */
#define E_ISELECT    4      /* Incomplete selection */
#define E_TIMEOUT    5      /* Command timed out */

int zsha_abort(devp)
zscsi_dev_t *devp;
```

Finally, the **zsha_abort()** entry point is used to abort a request that has taken too long to complete (or possibly when the process receives a signal). The function will return true if the request could be aborted immediately (e.g. it hasn't started yet), and false if the driver needs to wait for the "**devp->state**" field to go to "ST_IDLE".

FILES

/usr/include/sys/zsha.h
/usr/include/sys/ziovec.h
/usr/include/sys/zscsi.h

DIAGNOSTICS

Various hardware errors will result in the occasionally ambiguous SCSI error message being displayed on the console.

BUGS

There is a problem with the zsha_abort() function on some devices if it occurs while the effected command is attempting to select a target.

SEE ALSO

zssa (7)

NAME

zssa - Zenith SCSI tape (sequential access) driver

DESCRIPTION

Zenith SCSI Architecture

SCSI stands for Small Computer System Interface. SCSI is described completely in American National Standard X3.131-1986.

SCSI devices either issue commands, or execute them. A SCSI device that issues commands is called an initiator; a SCSI device that executes commands is called a target. This implementation supports one initiator (the personal workstation), and multiple targets (intelligent peripherals or peripheral controllers).

Each SCSI device has a unique bus id (BID). BID 7 is reserved for use by the personal workstation; BID 0 is reserved for use by the (optional) SCSI boot disk; BIDs 1 through 6 are available for use by other targets.

A peripheral controller may support up to eight logical units (LUNs). An intelligent peripheral typically supports one LUN.

It is possible to attach a variety of devices (e.g., disks, tapes, WORMs, CD-ROMs) to the SCSI bus. Therefore, multiple SCSI device drivers must be able to share the SCSI interface on the personal workstation without interfering with each other. This is accomplished with a layered software architecture. A host adapter module coordinates access to the host adapter, as well as to the SCSI devices themselves.

Device Special Files

"Rewind on close" tape drives are accessed through files of the form /dev/rct/bilj, where i is the BID, and j is the LUN. Therefore /dev/rct/b1l0 refers to the rewind on close tape drive at BID 1, LUN 0. The file /dev/rct0 refers to the default rewind on close tape drive.

"No rewind on close" tape drives are accessed through files of the form /dev/rct/biljn, where i is the BID, and j is the LUN. Therefore /dev/rct/b1l0n refers to the no rewind on close tape drive at

BID 1, LUN 0. The file /dev/nrct0 refers to the default no rewind on close tape drive.

The Minor Number

Bit 7 of the minor number specifies the LUN.

Bits 6-4 of the minor number specify the BID.

If bit 2 of the minor number is 0 and bit 3 of the minor number is 1, rewind on close is indicated.

If bit 2 of the minor number is 0 and bit 3 of the minor number is 0, no rewind on close is indicated.

Bits 1 and 0 of the minor number are reserved for future use.

Ioctl Calls Supported

TC_SEOF
This call takes a count as an argument and seeks to the *arg*th file mark on the tape.

TC_REWIND
This call causes the tape to be rewound to the beginning of tape point.

TC_WFM
This call takes a count as an argument and writes *count* file marks onto the tape.

TC_ERASE
This call causes the entire tape to be erased.

TC_RETENSION
This call causes the tape to be shuttled from beginning to end and back again.

TC_WAIT
This call is a no-operation.

TC_GETPARMS
This call is not implemented.

FILES

/usr/include/sys/ziovec.h
/usr/include/sys/zscsi.h
/usr/include/sys/zsha.h
/usr/include/sys/zssa.h
/dev/rct/b[1-6]l0
/dev/rct/b[1-6]l0n
/dev/rct0
/dev/nrct0

SEE ALSO

zsha(7), ioctl(2), cpio(1), tar(1)

DIAGNOSTICS

"SCSI host adapter not present"
This diagnostic indicates that the SCSI host adapter either is not present or is broken.

"bad fixed block length"
This diagnostic indicates that the tape is a fixed block device, but the block size is not supported.

"device already allocated"
This diagnostic indicates that another SCSI driver is using this device.

"device doesn't respond"
This diagnostic indicates that the device either is not present or is not functioning.

"device doesn't support read block limits"
This diagnostic indicates that your drive is broken.

"host adapter protocol error"
This diagnostic indicates that the tape driver and/or the host adapter module is malfunctioning.

"illegal request argument"
This diagnostic indicates that an illegal ioctl was attempted.

"increase NU_SA_DEV in space.c"
This should never happen.

"internal driver error"
This diagnostic indicates that driver data structures have been corrupted.

"invalid device"
This diagnostic indicates that driver data structures have been corrupted.

"no current buf"
This diagnostic indicates that the tape generated a spurious interrupt.

"no iobufs"
This should never happen.

"not SCSI sequential access device"
This diagnostic indicates that the device is not a tape.

"not a fixed block device"
This diagnostic indicates that the device is a tape, but it is not a fixed block device.

"rewind after erase failed"
This diagnostic indicates that something went wrong during the Rewind ioctl.

"rewind failed"
This diagnostic indicates that the rewind operation failed.

"rewind prior to erase failed"
This diagnostic indicates that something went wrong during the Erase ioctl.

"spurious interrupt"
This diagnostic indicates that the tape generated a spurious interrupt.

"state machine error"
This should never happen.

"write filemark failed"
This diagnostic indicates that something went wrong during the Filemark ioctl.

NAME

zssa - Zenith SCSI tape (sequential access) driver

DESCRIPTION

Zenith SCSI Architecture

SCSI stands for Small Computer System Interface. SCSI is described completely in American National Standard X3.131-1986.

SCSI devices either issue commands, or execute them. A SCSI device that issues commands is called an initiator; a SCSI device that executes commands is called a target. This implementation supports one initiator (the personal workstation), and multiple targets (intelligent peripherals or peripheral controllers).

Each SCSI device has a unique bus id (BID). BID 7 is reserved for use by the personal workstation; BID 0 is reserved for use by the (optional) SCSI boot disk; BIDs 1 through 6 are available for use by other targets.

A peripheral controller may support up to eight logical units (LUNs). An intelligent peripheral typically supports one LUN.

It is possible to attach a variety of devices (e.g., disks, tapes, WORMs, CD-ROMs) to the SCSI bus. Therefore, multiple SCSI device drivers must be able to share the SCSI interface on the personal workstation without interfering with each other. This is accomplished with a layered software architecture. A host adapter module coordinates access to the host adapter, as well as to the SCSI devices themselves.

Device Special Files

"Rewind on close" tape drives are accessed through files of the form /dev/rct/bilj, where i is the BID, and j is the LUN. Therefore /dev/rct/b1l0 refers to the rewind on close tape drive at BID 1, LUN 0. The file /dev/rct0 refers to the default rewind on close tape drive.

"No rewind on close" tape drives are accessed through files of the form /dev/rct/biljn, where i is the BID, and j is the LUN. Therefore /dev/rct/b1l0n refers to the no rewind on close tape drive at

BID 1, LUN 0. The file /dev/nrct0 refers to the default no rewind on close tape drive.

The Minor Number

Bit 7 of the minor number specifies the LUN.

Bits 6-4 of the minor number specify the BID.

If bit 2 of the minor number is 0 and bit 3 of the minor number is 1, rewind on close is indicated.

If bit 2 of the minor number is 0 and bit 3 of the minor number is 0, no rewind on close is indicated.

Bits 1 and 0 of the minor number are reserved for future use.

Ioctl Calls Supported

MT_STATUS
This ioctl is not implemented.

MT_RESET
This ioctl does nothing.

MT_REPORT
Returns an integer code which determines the type of device which the driver controls. The type numbers are defined in **/usr/include/sys/tape.h**.

MT_RETEN
Winds the tape forward to EOT and then backward to BOT.

MT_REWIND
Rewinds the tape to BOT.

MT_ERASE
Erases the data on the tape and retensions the cartridge.

MT_AMOUNT
This ioctl is not implemented.

MT_RFM
Winds the tape foward to the next file mark.

MT_WFM
Writes a file mark at the current location on the tape.

MT_LOAD
On devices which are capable of doing so, loads the tape into the drive.

MT_UNLOAD
On devices which are capable of doing so, unloads the tape from the drive.

FILES

/usr/include/sys/ziovec.h
/usr/include/sys/zscsi.h
/usr/include/sys/zsha.h
/usr/include/sys/zssa.h
/dev/rct/b[1-6]l0
/dev/rct/b[1-6]l0n
/dev/rct0
/dev/nrct0

SEE ALSO

zsha(7), ioctl(2), cpio(1), tar(1)

DIAGNOSTICS

"SCSI host adapter not present"
This diagnostic indicates that the SCSI host adapter either is not present or is broken.

"bad fixed block length"
This diagnostic indicates that the tape is a fixed block device, but the block size is not supported.

"device already allocated"
This diagnostic indicates that another SCSI driver is using this device.

"device doesn't respond"
This diagnostic indicates that the device either is not present or is not functioning.

"device doesn't support read block limits"
This diagnostic indicates that your drive is broken.

"host adapter protocol error"
This diagnostic indicates that the tape driver and/or the host adapter module is malfunctioning.

"illegal request argument"
This diagnostic indicates that an illegal ioctl was attempted.

"increase NU_SA_DEV in space.c"
This should never happen.

"internal driver error"
This diagnostic indicates that driver data structures have been corrupted.

"invalid device"
This diagnostic indicates that driver data structures have been corrupted.

"no current buf"
This diagnostic indicates that the tape generated a spurious interrupt.

"no iobufs"
This should never happen.

"not SCSI sequential access device"
This diagnostic indicates that the device is not a tape.

"not a fixed block device"
This diagnostic indicates that the device is a tape, but it is not a fixed block device.

"rewind after erase failed"
This diagnostic indicates that something went wrong during the Rewind ioctl.

"rewind failed"
This diagnostic indicates that the rewind operation failed.

"rewind prior to erase failed"
This diagnostic indicates that something went wrong during the Erase ioctl.

"spurious interrupt"
This diagnostic indicates that the tape generated a spurious interrupt.

"state machine error"
This should never happen.

"write filemark failed"
This diagnostic indicates that something went wrong during the Filemark ioctl.

Chapter 6. Command Line Operation

In addition to the Advanced and Novice menu systems, SY-TOS gives you the opportunity to execute its commands at the DOS command prompt. Once you become an experienced user, you might find it faster to pass "command switches" to SY-TOS rather than stepping through the cues provided by the menu systems.

You can also execute SY-TOS commands by specifying a "batch" text file. You create the batch file by placing the command switches in a batch text file.

Executing SY-TOS Commands at the DOS Command Prompt

This method actually calls SY-TOS; therefore, you need to be in the directory where SY-TOS is installed. After you type the commands and press <Enter>, the Advanced menu system appears on the screen and the system begins executing the command(s) previously entered. It then redisplays the DOS command prompt upon completion.

Procedure

1. Type **SYTOS**, press the **<Space Bar>** and then type a **-** (hyphen).

2. Type the command switches you want to execute (a maximum of 127 characters) and press **<Enter>**.

   The command switch format you must follow when executing commands is:

   LETTERS SPEC -

   LETTERS stand for the first letter of each command (for example, **BFL** for Backup File List). Refer to the table at the end of this chapter for an alphabetical list of the SY-TOS commands and their respective command switches.

SPEC indicates any required specifications to a command (for example, a filename or a volume name). A "," (comma) must separate multiple specifications to a command.

" " (space) and **- (hyphen)** must follow each command set, which includes any specifications to a command. The space and hyphen are actually an implicit **<Enter>**. Wherever you press <Enter> in the Advanced menu system, you need to specify a space and hyphen in the command line operation.

Example

Suppose you want to back up files in the \wp and \wp\notes directories and then verify them. You would type the following at the DOS command prompt:

```
C:\SYTOS>SYTOS -OAN -OBN -BFL \WP\*.*,
\WP\NOTES\*.* -DAILY_BACKUP -
-VFL \WP\*.* \WP\NOTES\*.* -Q <Enter>
```

SYTOS, " " (space), - (hyphen) initiate SY-TOS. The characters following **SYTOS** are switches that SY-TOS will interpret and process.

OAN translates into the Options Append No command. For this example, no matter what the current setting is in the ST-CONFIG utility for the Options Append command, you want to make sure at the time of issuing these SY-TOS commands that you are not appending to a tape. The space and hyphen represent the <Enter> key. It is as if you were in the Advanced menu system with the Options Append No command highlighted and pressed the <Enter> key to request SY-TOS to accept the new setting and return you to the command bar.

OBN translates into the Options Break No command. This will ensure that if the <Ctrl> <Break> or <Ctrl> <C> key combinations are pressed accidentally during the execution of the batch file, SY-TOS will not stop.

BFL translates into the Backup File List command and **\WP*.*, \WP\NOTES*.*** is the command specification (in this example, the files in the \wp and \wp\notes directories to be backed up). The space and hyphen following the files represent the <Enter> you must press after specifying filenames.

DAILY_BACKUP, " " (space), - (hyphen) translate into the volume name and <Enter>.

" " (space) and **- (hyphen)** translate into a null password and <Enter>. It is as if you simply pressed the <Enter> key at the password prompt in the Advanced menu system.

VFL translates into the Verify File List command and **\WP*.*, \WP\NOTES*.*** are the files to be verified. The space and hyphen are the <Enter> key that you would normally press when in the Advanced menu system.

Q is the Quit command to exit SY-TOS. You do not need a space and hyphen following the last command set because you explicitly press <Enter> at the end.

NOTES

- When operating SY-TOS from the command line, you may not use spaces within a volume name or password nor when specifying multiple files or disks.
- The file specification criteria and Options you specified in the ST-CONFIG utility are in effect when you execute commands at the DOS command prompt. To ensure these commands are assigned the settings you want at the time, it is advisable to specify them when entering SY-TOS commands at the DOS command prompt.
- If the security system is on, you must first type a username and password before typing the commands.

  The command switch format for entering a username and password before command sets is:

  ```
  USERNAME PASSWORD -LETTERS SPEC -
  ```

  Where **username** and **password** (separated by a space) correspond to the correct user's name and password preceding the command sets.

  Using the above example and having the security system on, if your username is smith and your password is smith, you would type:

  ```
  C:\SYTOS>SYTOS SMITH SMITH -OAN -OBN
  -BFL \WP\*.*,\WP\NOTES\*.*
  -DAILY_BACKUP - -VFL
  \WP\*.*,\WP\NOTES\*.* -Q <Enter>
  ```

Creating Batch Files under DOS

The SY-TOS command coupled with specified SY-TOS command switches may be placed within a "batch" text file under a user specified filename. This file must have a file extension of .bat. This extension tells DOS to execute commands indicated within this file. Once the batch file is created and contains the SY-TOS command switches along with any specifications, you simply type its name at the DOS command prompt to execute the SY-TOS commands.

You can use the DOS EDLIN program, or any word processor (in unformatted mode), to create a batch file. Refer to your DOS manual for information about creating batch files under DOS.

The following examples are sample batch files you may wish to create. The command switches you would enter when creating a batch file appear in each example. A table at the end of the chapter lists the commands you can specify and their respective switches.

NOTES

- Because you may not be present to view the verification and/or error messages that SY-TOS displays in the MESSAGES window, these examples have opened the Journal before backing up. You can then review the Journal file at any time. When using the Journal in batch mode, SY-TOS automatically appends information to the file if it already exists.
- When the Journal is open during a Backup Disk or Options Device Backup operation, SY-TOS updates the Journal file, thereby altering the information on the disk. Upon verifying the backup, you may receive an error message stating that certain blocks failed verification. We therefore recommend that you log to a printer or alternate disk during Disk or Device backup and verify operations.
- When running SY-TOS from a batch file and you are not appending to the tape, SY-TOS will automatically overwrite any information that is on the tape. SY-TOS will not prompt you for confirmation to overwrite.
- You should use extreme caution when creating a batch file to restore files. There is room for errors to occur. For example, if Options Restore is set to New and you forget to create the directory, SY-TOS will not be able to change to the specified directory path, thereby restoring files to a wrong area. It is advisable to use the Advanced menu system to interactively restore files.

Example 1 - Backing up All Files

This example illustrates a batch file called **backfile.bat** whose contents contain the commands to back up all files on disk C to a tape with the volume name of "all_files_on_c." To ensure that the Options and file selection criteria are assigned the settings you want for this example, they will be specified in the batch file.

The batch file contains the following SY-TOS command switches:

```
SYTOS -OAN -OBN -OJB SYTOS.LOG -SSI C:\*.* -SSE
-SSCN -SSDN -SSTY -SSSA -BFS ALL_FILES_ON_C -
-VFS -OJE -Q
```

Once you type **BACKFILE** and press **<Enter>** at the DOS command prompt, SY-TOS assigns the following Options and Select commands these settings:

Command	Assigned Setting
Options Append	No
Options Break	No
Options Journal	Begin
Set Select Include	C:*.*
Set Select Exclude	No files specified
Set Select Changed	No
Set Select Date	No
Set Select Trees	Yes
Set Select Session	All

SY-TOS opens the SYTOS.LOG Journal file and backs up the preselected files to a tape with the volume name of

"all_files_on_c." It then verifies the preselected files, closes the Journal and stops. SY-TOS places any information displayed in the MESSAGES and STATISTICS windows during the backup and verification in the SYTOS.LOG file, which is located in the directory where SY-TOS is installed. You may review the Journal file at any time to ensure that the tasks were completed correctly.

NOTE
You can modify this batch file to request SY-TOS to back up only files that have changed by replacing -SSCN (Set Select Changed No) with -SSCS (Set Select Changed Set) in the batch file. You can also modify this batch file to customize your specific disk needs by changing the Set Select Include specifications and you can enter a different Journal filename.

Example 2 - Backing up a Disk

Example 2 illustrates a batch file called **backdisk.bat** whose contents contain the command switches to back up the complete contents of DOS disk C to a tape with the volume name of "dos_disk_backup_of_c."

The batch file contains the following SY-TOS command switches:

```
SYTOS -OAN -OBN -OJB PRN -BD C:
-DOS_DISK_BACKUP_OF_C - -VD -OJE -Q
```

Once you type **BACKDISK** and press **<Enter>**, SY-TOS sets the Options Append command to No, instructs the Journal to log to a printer and backs up the contents of disk C to a tape with the volume name of "dos_disk_backup_of_c." SY-TOS then verifies the disk backup, closes the Journal and stops. SY-TOS will print any information displayed in the MESSAGES and STATISTICS windows during the backup and verification which you may review to ensure that the tasks were correctly completed.

Example 3 - Backing up Files on Multiple Disks

This example illustrates a batch file called **backdsks.bat** whose contents contain the command switches to back up all files on disks C and D to a tape with the volume name of "all_files_on_c_and_d."

The batch file contains the following SY-TOS command switches:

```
SYTOS -OAN -OBN -OJB D:DISKS2.LOG -SSI
C:\*.*,D:\*.* -SSE -SSCN -SSDN -SSTY -SSSA
-BFS ALL_FILES_ON_C_AND_D - -VFS -OJE -Q
```

Once you type **BACKDSKS** and press **<Enter>**, SY-TOS assigns the following Options and Select commands these settings:

Command	Assigned Setting
Options Append	No
Options Break	No
Options Journal	Begin
Set Select Include	C:*.*,D:*.*
Set Select Exclude	No files specified
Set Select Changed	No
Set Select Date	No
Set Select Trees	Yes
Set Select Session	All

SY-TOS opens the DISKS2.LOG Journal file on disk D and backs up the preselected files to a tape with the volume name of "all_files_on_c_and_d." It verifies the preselected files, closes the Journal and stops. SY-TOS places any information displayed in the MESSAGES and STATISTICS windows during the backup and verification in the DISKS2.LOG file on disk D. You may review the Journal file at any time to ensure that the tasks were correctly completed.

NOTE
You can modify this batch file to request SY-TOS to back up only files that have changed by replacing -SSCN (Set Select Changed No) with -SSCS (Set Select Changed Set) in the batch file. You can also modify this batch file to customize your specific disk needs by changing the Set

Select Include specifications and you can enter a different Journal filename.

Example 4 - Using Multiple @ Files

An *@ file* is a text file containing names of files that SY-TOS will back up, verify and/or restore. We refer to it as an @ file because an @ symbol precedes the complete pathname when you specify this file at a SY-TOS prompt. This symbol informs SY-TOS that the following file is a special one. You may use @ files with the following commands:

- Backup File List.
- Verify File List.
- Restore File List.
- Restore Disk List.
- Select Include.
- Select Exclude.

When entering the files in the @ file, you must give the complete pathnames and separate each file with either a space, comma or <Enter>. You may include a maximum of 40 files and/or directories in each @ file.

There may be occasions when you have more than 40 files and/or directories that you want to back up, verify or restore. This example illustrates a batch file called **backlsts.bat** whose contents contain the command switches to back up and verify two @ files called daily.01 and daily.02 which are located in the \SYTOS directory.

SPECIAL NOTE
This batch file uses the Backup File List command to back up the files listed in each @ file. Because two backup sessions exist on the tape, the Verify File Selected command will be specified to ensure that both sessions are verified. To include both sessions, the Set Select Session command will be configured to All. To make sure that SY-TOS can locate the backed up files and directories in each @ file on the disk, Set Select Include will be configured to C:*.*, Set Select Trees will be configured to Yes and Set Select Exclude will not have any files specified.

The batch file contains the following SY-TOS command switches:

```
SYTOS -OAN -OBN -OJB DAILY.LOG -BFL
@C:\SYTOS\DAILY.01 -BACKING_UP_@FILES - -OAY
-BFL @C:\SYTOS\DAILY.02 -SSI C:\*.* -SSE -SSCN
-SSDN -SSTY -SSSA -VFS -OJE -Q
```

Once you type **BACKLSTS** and press <Enter>, SY-TOS sets the Options Append and Options Break commands to No, opens the DAILY.LOG Journal file and backs up the files listed in daily.01 to the tape called "backing_up_@files." It then resets the Options Append command to Yes and backs up the files listed in daily.02 onto the same tape. SY-TOS assigns the file selection criteria the following settings:

Command	Assigned Setting
Set Select Include	C:*.*
Set Select Exclude	No files specified
Set Select Changed	No
Set Select Date	No
Set Select Trees	Yes
Set Select Session	All

Note that the Set Select Include and Exclude criteria will vary for you depending on the contents of your @ files.

SY-TOS verifies the preselected files, closes the Journal and stops. SY-TOS places any information displayed in the MESSAGES and STATISTICS windows in the DAILY.LOG file which is in the directory where SY-TOS is installed. You may review this file at any time to ensure that the tasks were correctly completed.

Example 5 - Using Multiple Tapes

There may be times when you want to back up more information than will fit on one tape. When your backup session requires more than one tape, SY-TOS informs you and waits for

you to insert another tape. When you verify the backup, you must begin with the first tape; otherwise, the verification will fail. However, when running a SY-TOS batch file, you must have commands in the file to instruct SY-TOS to stop before beginning the verification so you can remove the last tape backed up and insert the first tape. You can use the DOS batch command PAUSE within the SY-TOS batch file. The PAUSE command temporarily stops the execution of a batch file until you press a key.

> **NOTE**
> Because you exit SY-TOS before verifying the files in this batch file, SY-TOS resets the Options and Select commands to their default values as specified in the ST-CONFIG utility. To ensure that SY-TOS uses the same settings when verifying, it is necessary to respecify them before executing the Verify File Selected command.

This example illustrates a batch file called **tape2.bat** whose contents contain command switches to back up information on to two tapes.

```
SYTOS -OAN -OBN -OJB SYTOS.LOG -SSI C:\*.* -SSE
-SSCN -SSDN -SSTY -SSSA -BFS
BACKUP_ALL_FILES - -OJE -Q
ECHO OFF
ECHO INSERT FIRST TAPE VOLUME AND PROCEED WITH
VERIFICATION
PAUSE
SYTOS -OAN -OBN -OJB SYTOS.LOG -SSI C:\*.* -SSE
-SSCN -SSDN -SSTY -SSSA -VFS -OJE -Q
```

Once you type **TAPE2** and press **<Enter>**, SY-TOS assigns the Options and Select commands the following settings:

Command	Assigned Setting
Options Append	No
Options Break	No
Options Journal	Begin
Set Select Include	C:*.*
Set Select Exclude	No files specified
Set Select Changed	No
Set Select Date	No
Set Select Trees	Yes
Set Select Session	All

As SY-TOS backs up all the files on to the tapes with the volume name of "backup_all_files," it prompts you when it needs another tape. When the backup is completed, SY-TOS stops. DOS then displays the following message on your screen: "INSERT FIRST TAPE VOLUME AND PROCEED WITH VERIFICATION."

Once you insert the first tape and press a key, SY-TOS resets the Options and Select commands to the settings you specified for the backup. It then verifies the information on the tape, prompts you to insert the second tape and verifies that tape's contents.

An Overview of SY-TOS' Command Switches

The following table lists in alphabetical order the SY-TOS commands that you can specify at the DOS command prompt or in a batch file. When running SY-TOS under a network environment, the Disk commands are not available; consequently, you may not use their command switches. For example, "bd" for Backup Disk or "rdl" for Restore Disk List.

Command	Switches
Backup Disk	bd
Backup File List	bfl
Backup File Selected	bfs
Directory Disk List	ddl
Directory Disk Selected	dds
Directory Tape Disk List	dtdl
Directory Tape Disk Selected	dtds
Directory Tape File List	dtfl

Command	Switches
Directory Tape File Selected	dtfs
Options Append No	oan
Options Append Yes	oay
Options Break No	obn
Options Break Yes	oby
Options Device Backup	odb
Options Device Restore	odr
Options Device Verify	odv
Options Journal Begin	ojb
Options Journal End	oje
Options Library Active No	olan
Options Library Active Yes	olay
Options Library Update Add	olua
Options Prompt No	opn
Options Prompt Yes	opy
Options Restore New	orn
Options Restore Original	oro
Restore Disk Entire	rde
Restore Disk List	rdl
Restore Disk Selected	rds
Restore File List	rfl
Restore File Selected	rfs

Command	Switches
Set Disk	sd
Set Path	sp
Set Select Changed No	sscn
Set Select Changed Keep	ssck
Set Select Changed Set	sscs
Set Select Date After	ssda
Set Select Date Before	ssdb
Set Select Date No	ssdn
Set Select Exclude	sse
Set Select Include	ssi
Set Select Session All	sssa
Set Select Session Specific	ssss
Set Select Trees No	sstn
Set Select Trees Yes	ssty
Verify Disk	vd
Verify File List	vfl
Verify File Selected	vfs
Quit	q

Chapter 7. The ST-BATCH Utility

The ST-BATCH utility allows you to create DOS batch files for operating SY-TOS. You step through the Advanced menu system to select the commands that you want to place into a batch file. Once you create the batch file, you simply type its name and SY-TOS executes the commands. This is useful for daily backup procedures where you can define repeated SY-TOS operations in a single batch file (for example, DAILY.BAT).

The advantage to using the ST-BATCH utility versus the command switch format described in Chapter 6 is that you can specify more commands (the command switch method has a DOS limit of 127 characters), and you can access the Help Facility when using ST-BATCH. You also do not have to worry about specifying the correct command switch format for each command. See the section in Chapter 3 entitled The On-Line Help Facility for more information about the help function.

Creating a Batch File Using the ST-BATCH Utility

The batch file that you create actually calls SY-TOS; therefore, the batch file must be in the same directory as SY-TOS.

SPECIAL NOTES

- When creating a batch file, you should set the Set Select and Options values to those you want for that particular batch job. This will ensure that SY-TOS will use the correct settings each time you execute the batch file.
- You should use extreme caution when creating a batch file to restore files. There is room for errors to occur. For example, you may want to restore files to a new path and set the Options Restore command to New but forget to change the current directory path, which would result in files being restored to the wrong location. It is advisable

to use the Advanced menu system to interactively restore files.

Procedure

1. At the DOS command prompt, type **STBATCH** and press **<Enter>**.

   The ST-BATCH display appears on the screen with the following prompt:

   ```
   Enter FILENAME for batch file or <Esc>
   to Quit:
   ```

2. Type the name for the batch file that you want to create and press **<Enter>**. The name can be a maximum of 8 characters long and cannot contain a period. (ST-BATCH places the file with a **.bat** extension in the current directory.)

   If the filename you type already exists, ST-BATCH will prompt you before overwriting the file.

   The default file selection criteria settings appear in the SELECT window at the bottom of your screen. Figure 7-1 illustrates the screen display with a sample batch filename.

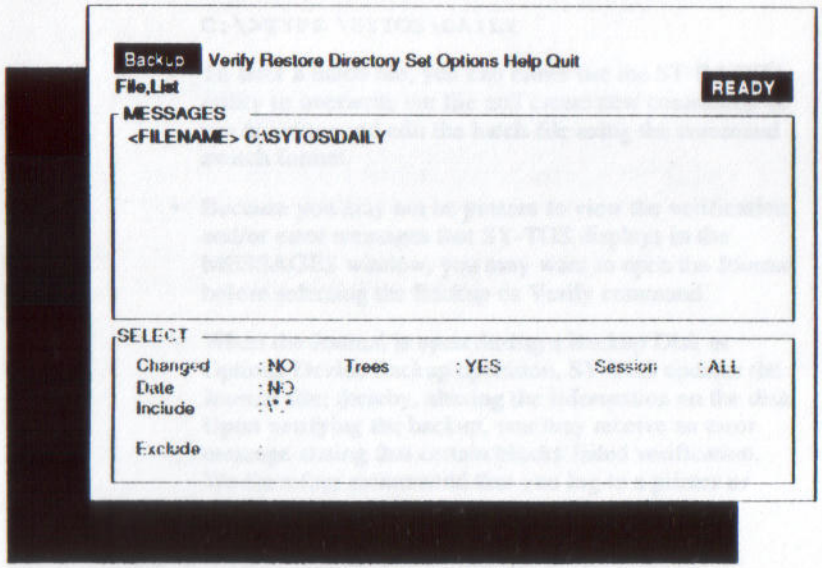

Figure 7-1 The ST-BATCH Screen Display

3. Select the first command set that you want to appear in the batch file.

   A command set is one complete task (for example, Backup File List <filename>). You select the commands in the same way as if you were using the Advanced menu system in SY-TOS. Each command you choose appears in the MESSAGES window.

   You can cancel a command by pressing **<Esc>** as long as you have not completed the command set. For example:

   Backup File List <Esc>

   <Esc> cancels the last command displayed in the MESSAGES window and removes it from the display.

4. Select the next command set that you want to appear in the batch file. Repeat this step until you have selected all of the commands you want to execute from the batch file.

   To cancel ALL commands that you have entered and restart the current session, press the **<F1>** function key. If you have selected any Set Select commands, ST-BATCH will not reset their values. You can view the current settings for the Set Select commands in the SELECT window at the bottom of the screen.

5. Choose the **Quit** command when you have finished entering the commands that you want to appear in this file.

   ST-BATCH displays the following prompt:

   ```
   Do you wish this session saved? (Y/N)
   [Y]
   ```

6. Press one of the following keys:

Key to Press	Activity
<Enter>	Creates the batch file. (ST-BATCH saves the file in the current directory on the current disk and displays the DOS command prompt.)
<N> and <Enter>	Cancels the current session and returns to the DOS command prompt.

<Esc> Returns to the command bar and continues the current ST-BATCH session.

NOTES

- If the security system is on, SY-TOS will prompt you for a username and optional password before allowing you access to the ST-BATCH utility.
- ST-BATCH creates two files, one with a .bat extension and one without an extension. The file with the .bat extension contains instructions for SY-TOS. The file without the extension contains the command switches to the commands you selected when using ST-BATCH. SY-TOS will create a third file when you make a batch file containing only a list of files. Refer to Example 5 in this chapter for information on this type of file.

  To view the contents of a batch file, use the DOS command TYPE. If you are not in the directory containing that file, specify the complete pathname. For example:

  ```
  C:\>TYPE \SYTOS\DAILY
  ```

- To alter a batch file, you can either use the ST-BATCH utility to overwrite the file and create new commands or use an editor and edit the batch file using the command switch format.
- Because you may not be present to view the verification and/or error messages that SY-TOS displays in the MESSAGES window, you may want to open the Journal before selecting the Backup or Verify command.
- When the Journal is open during a Backup Disk or Options Device Backup operation, SY-TOS updates the Journal file; thereby, altering the information on the disk. Upon verifying the backup, you may receive an error message stating that certain blocks failed verification. We therefore recommend that you log to a printer or alternate disk (disk D for example) during Disk or Device backup and verify operations.

Executing a Batch File Created by ST-BATCH

When you execute a batch file, the Advanced menu system appears on the screen. The status indicator will be set to BATCH to indicate that the SY-TOS session is in batch mode. SY-TOS proceeds to execute the commands specified in the batch file. Upon completing the commands, SY-TOS redisplays the DOS command prompt.

At the DOS command prompt, type the name of the batch file and press **<Enter>**. For example:

```
C:\SYTOS>DAILY <Enter>
```

NOTES

- When you execute the batch file and the security system is on, SY-TOS checks the username and password before executing the commands in the file.

  If the security system has been turned off, SY-TOS will not check the username and password before executing the commands in the batch file.
- When running SY-TOS from a batch file and you are not appending to the tape, SY-TOS will automatically overwrite any information that is on the tape. SY-TOS will not prompt you for confirmation to overwrite.
- When using the Journal in batch mode, SY-TOS automatically appends information to the file if it exists.

A Sample Batch File

Suppose you want to back up all files on the current disk at the end of each day. You could create a batch file called **daily.bat** that would back up preselected files, verify the backup and place the information in a Journal file. You could then review the Journal to ensure that the SY-TOS operations were performed correctly.

To create a batch file that would back up and verify all files on the current disk, follow these steps.

Procedure

1. From the directory where the SY-TOS files reside, type **STBATCH** and press **<Enter>**.

   The ST-BATCH display appears on the screen. You are prompted for a batch filename.

2. Type **DAILY** and press **<Enter>**.

   You select commands in the ST-BATCH utility just as you would when using the Advanced menu system in SY-TOS.

3. Select the **Options Append No** command to back up information starting at the beginning of the tape.

   As you select commands, ST-BATCH places them in the MESSAGES window. Use the **<Esc>** key to cancel a command or the **<F1>** function key to cancel all of the commands.

4. Choose the **Options Break No** command. This will ensure that if the <Ctrl> <Break> or <Ctrl> <C> key combinations are pressed accidently during the execution of the batch file, SY-TOS will not stop.

5. Select the **Options Journal Begin** command to open the Journal.

   ST-BATCH prompts you for the name of the Journal file while displaying SYTOS.LOG for the default filename.

6. Press **<Enter>** to accept SYTOS.LOG as the Journal file.

7. Select the **Set Disk** command, specify the disk whose information you want to back up (for example, C:) and press **<Enter>**.

8. Select the **Set Select Include** command, type ***.*** at the Include prompt and press **<Enter>**.

9. Choose the **Set Select Exclude** command and press **<Enter>** twice to leave this field blank.

10. Select the **Set Select Changed No** command.

11. Select the **Set Select Date No** command.

12. Choose the **Set Select Trees Yes** command.

13. Select the **Set Select Session All** command.

    You have now established the options and file selection criteria that you want SY-TOS to use when executing this batch file.

14. Choose the **Backup File Selected** command to back up files based on the current file selection criteria you just specified.

    The system prompts you for a tape volume name and an optional password because Append is set to No. It will automatically overwrite existing information on the tape.

15. Type **DAILY BACKUP** and press **<Enter>**.

16. Press **<Enter>** at the password prompt. SY-TOS will not assign a password to this tape.

17. Select the **Verify File Selected** command to verify the backup.

18. Select the **Options Journal End** command to close the Journal.

    Your screen should now look similar to Figure 7-2.

    NOTE
    When the commands you select fill the MESSAGES window, they will scroll up and off of the screen as you choose additional commands.

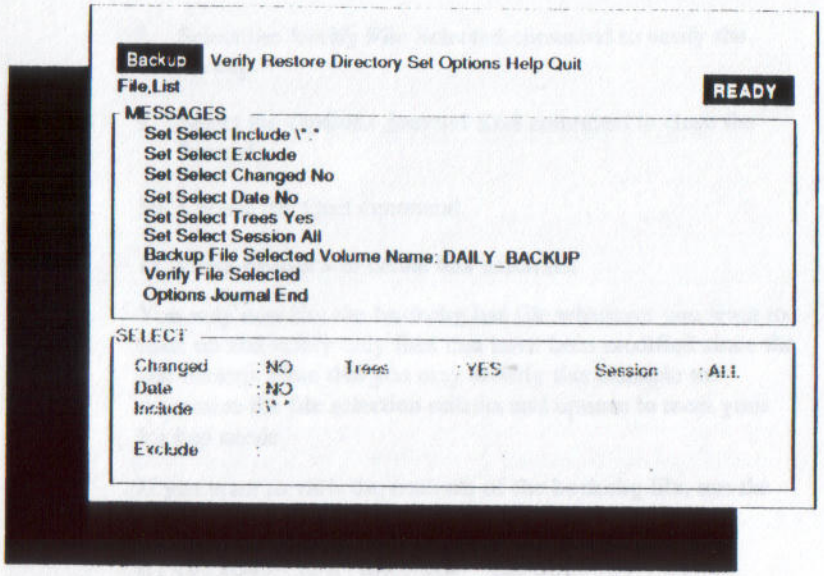

Figure 7-2 Example of a Batch File

19. Choose the **Quit** command.

20. Press **<Enter>** to create this batch file.

You may now use the **daily.bat** file whenever you want to back up preselected files. You can then view the Journal to make sure SY-TOS correctly backed up the files.

If you want to view the contents of the **daily** file, use the DOS command TYPE. For example:

```
C:\SYTOS>TYPE DAILY <Enter>
```

The **daily** file would contain the following SY-TOS command switches:

```
-OAN -OBN -OJB SYTOS.LOG -SD C: -SSI
\*.*, -SSE -SSCN -SSDN -SSTY -SSSA -BFS
DAILY_BACKUP - -VFS -OJE -Q
```

Examples of Batch Files

The following are examples of batch files that you may want to create.

Example 1 - Backing up Modified Files

This example illustrates how to create a batch file to back up only those files that have changed since the last backup and then verify the backup. It also uses the Library feature. If you do not want to activate and use the Library, set the Options Library Active command to No.

Procedure

1. From the directory where the SY-TOS files reside, type **STBATCH** and press **<Enter>**.

   The ST-BATCH display appears on the screen. You are prompted for a batch filename.

2. Type **BACKCHG** and press **<Enter>**.

3. Specify the following file selection criteria:

   Set Select Include *.*
   Set Select Exclude (No files specified)
   Set Select Changed Set
   Set Select Date No
   Set Select Trees Yes
   Set Select Session All

4. Next, assign the Options commands the following settings:

   Options Append No
   Options Break No
   Options Library Active Yes
   Options Journal Begin SYTOS.LOG

5. Select the **Backup File Selected** command to back up files based on the file selection criteria you just specified.

   The system prompts you for a tape volume name and an optional password because Append is set to No. It will automatically overwrite existing information on the tape.

6. Type **MODIFIED FILES ON DISK** and press **<Enter>**.

7. Press **<Enter>** at the password prompt. SY-TOS will not assign a password to this tape.

8. Select the **Verify File Selected** command to verify the backup.

9. Select the **Options Journal End** command to close the Journal.

10. Choose the **Quit** command.

11. Press **<Enter>** to create this batch file.

You may now use the **backchg.bat** file whenever you want to back up and verify only files that have been modified since the last backup. Note that you may modify this example to customize the file selection criteria and options to meet your backup needs.

If you want to view the contents of the **backchg** file, use the DOS command TYPE. For example:

```
C:\SYTOS>TYPE BACKCHG <Enter>
```

The **backchg** file would contain the following SY-TOS command switches:

```
-SSI \*.*, -SSE -SSCS -SSDN -SSTY -SSSA
-OAN -OBN -OLAY -OJB SYTOS.LOG -BFS
MODIFIED_FILES_ON_DISK - -VFS -OJE -Q
```

Example 2 - Backing up a DOS Disk

This example creates a batch file to back up the complete contents of the DOS disk C and then verifies that the backup was performed correctly.

Follow these steps.

1. From the directory where the SY-TOS files reside, type **STBATCH** and press **<Enter>**.

   The ST-BATCH display appears on the screen. You are prompted for a batch filename.

2. Type **BACKDISK** and press **<Enter>**.

3. Next, assign the Options commands the following settings:

   Options Append No
   Options Break No
   Options Journal Begin PRN

   NOTE
   When the Journal is open during a Backup Disk operation, SY-TOS updates the Journal file, thereby altering the information on the disk. Upon verifying the backup, you may receive an error message stating that certain blocks failed verification. To avoid this, you may want to specify PRN when prompted for a Journal file. This will instruct SY-TOS to log to a printer. You may also log to a disk which is not included in the backup operation if you do not have access to a printer (D:SYTOS.LOG for example).

4. Select the **Backup Disk** command.

   The system prompts you for the disk letter and displays the default which is C.

5. Press **<Enter>** to accept the default disk.

   (Note that if disk C is not the default, you will need to type **C:** and press **<Enter>** after the prompt.)

   The system now prompts you for a tape volume name and an optional password because Append is set to No.

6. Type **DOS DISK** and press **<Enter>**.

7. Press **<Enter>** after the password prompt.

8. Select the **Verify Disk** command to verify the backup.

   The system prompts you for the disk letter and sequence number that you want to verify. It also displays the default settings after the prompt.

9. Press **<Enter>** to accept the default, or type **C:1** and press **<Enter>**.

10. Choose the **Quit** command.

11. Press **<Enter>** to create this batch file.

You may now use the **backdisk.bat** file whenever you want to back up and verify the complete contents of a DOS disk C.

If you want to view the contents of the **backdisk** file, use the DOS command TYPE. For example:

```
C:\SYTOS>TYPE BACKDISK <Enter>
```

The **backdisk** file would contain the following SY-TOS command switches:

```
-OAN -OBN -OJB PRN -BD C:, -DOS_DISK -
-VD C:1 -Q
```

Example 3 - Backing up Files on Multiple Disks

This example illustrates how to create a batch file to back up all files on disks C and D and then verify that the backup was performed correctly.

Procedure

1. From the directory where the SY-TOS files reside, type **STBATCH** and press **<Enter>**.

   The ST-BATCH display appears on the screen. You are prompted for a batch filename.

2. Type **BACKDSKS** and press **<Enter>**.

3. Assign the Options commands the following settings:

   Options Append No
   Options Break No
   Options Journal Begin DISKS2.LOG

4. Specify the following file selection criteria:

   Set Select Include C:*.*,D:*.*
   Set Select Exclude (No files specified)
   Set Select Changed No
   Set Select Date No
   Set Select Trees Yes
   Set Select Session All

5. Select the **Backup File Selected** command to back up files based on the file selection criteria you just specified.

   The system prompts you for a tape volume name and an optional password because Options Append is set to No. SY-TOS will automatically overwrite existing information on the tape.

6. Type **ALL FILES ON C AND D** and press **<Enter>**.

7. Press **<Enter>** at the password prompt. SY-TOS will not assign a password to this tape.

8. Select the **Verify File Selected** command to verify the backup.

9. Choose the **Options Journal End** command to close the Journal.

10. Select the **Quit** command.

11. Press **<Enter>** to create this batch file.

You may now use the **backdsks.bat** file whenever you want to back up files on disks C and D. Note that you may modify this example to customize the file selection criteria to meet your backup needs.

If you want to view the contents of the **backdsks** file, use the DOS command TYPE. For example:

```
C:\SYTOS>TYPE BACKDSKS <Enter>
```

The **backdsks** file would contain the following SY-TOS command switches:

```
-OAN -OBN -OJB DISKS2.LOG -SSI
C:\*.*,D:\*.*, -SSE -SSCN -SSDN -SSTY
-SSSA -BFS ALL_FILES_ON_C_AND_D - -VFS
-OJE -Q
```

Example 4 - Using Multiple @ Files

This example illustrates how to create a batch file that uses multiple @ files to back up and verify specific files.

An *@ file* is a text file containing names of files that SY-TOS will back up, verify and/or restore. We refer to it as an @ file because an @ symbol precedes the complete pathname when you specify this file at a SY-TOS prompt. This symbol informs SY-TOS that the following file is a special one. You may use @ files with the following commands:

- Backup File List.
- Verify File List.
- Restore File List.
- Restore Disk List.
- Select Include.
- Select Exclude.

When entering the files in the @ file, you must give the complete pathnames and separate each file with either a space, comma or <Enter>. You may include a maximum of 40 files and/or directories in each @ file.

There may be occasions when you have more than 40 files and/or directories that you want to back up, verify or restore. This example illustrates how to back up and verify two @ files.

SPECIAL NOTE
This batch file uses the Backup File List command to back up the files listed in each @ file. Because two backup sessions exist on the tape, the Verify File Selected command will be specified to ensure that both sessions are verified. To include both sessions, the Set Select Session command will be configured to All. To make sure that SY-TOS can locate the backed up files and directories in each @ file on the disk, Set Select Include will be configured to C:*.*, Set Select Trees will be configured to Yes and Set Select Exclude will not have any files specified.

Procedure

1. From the directory where the SY-TOS files reside, type **STBATCH** and press <Enter>.

   The ST-BATCH display appears on the screen. You are prompted for a batch filename.

2. Type **BACKLIST** and press <Enter>.

3. Assign the Options commands the following settings:

   Options Append No
   Options Break No
   Options Journal Begin DAILY.LOG

4. Choose the **Backup File List** command.

   The system prompts you for the filenames.

5. Type the name of the file whose contents contains a list of files that you want to back up. An @ symbol must precede the complete pathname. For example:

   ```
   Enter FILENAMES, (press <Enter> for
   directory):@C:\SYTOS\DAILY.01
   ```

   The system prompts you for a volume name and an optional password because the Options Append command is set to No. It will automatically overwrite existing information on the tape.

6. Type **BACKING UP @ FILES** and press <Enter>.

7. Press <Enter> at the password prompt. SY-TOS will not assign a password to this tape.

8. Reset the **Options Append** command to **Yes**.

9. Reselect the **Backup File List** command.

   Once again, the system prompts you for filenames.

10. Type the name of the second file that contains a list of files to back up and precede it with an @ symbol. For example:

    ```
    Enter FILENAMES, (press <Enter> for
    directory):@C:\SYTOS\DAILY.02
    ```

11. Specify the following file selection criteria:

    Set Select Include C:*.*
    Set Select Exclude (No files specified)
    Set Select Changed No
    Set Select Date No
    Set Select Trees Yes
    Set Select Session All

12. Select the **Verify File Selected** command to verify the two backup sessions.

13. Choose the **Options Journal End** command to close the Journal.

14. Choose the **Quit** command.

You may now use this batch file or a modified version when you want to back up multiple @ files.

If you want to view the contents of the **backlist** file, use the DOS command TYPE. For example:

```
C:\SYTOS>TYPE BACKLIST <Enter>
```

The **backlist** file would contain the following SY-TOS command switches:

```
-OAN -OBN -OJB DAILY.LOG -BFL
@C:\SYTOS\DAILY.01 -BACKING_UP_@_FILES -
-OAY -BFL @C:\SYTOS\DAILY.02 -SSI C:\*.*
-SSE -SSCN -SSDN -SSTY -SSSA -VFS -OJE -Q
```

Example 5 - Creating a Batch File to be Used as an @ File

This example illustrates how to create a batch file to be used as an @ file. The batch file will contain only lists of files.

When you make a batch file containing only a list of filenames (using the Backup File List, Set Select Include or Set Select Exclude commands), ST-BATCH creates three types of files:

<batch filename>
<batch filename>.bat
<batch filename>.01,02,...

The batch file with the .01 (.02, .03, etc.) extension contains the list of files and not the commands. ST-BATCH creates a <batch filename>.## for each separate list of files specified in the batch session. For example, if you specified a list of files to include in a batch file called **include** and also specified a list of files to exclude, ST-BATCH would create the following files:

include
include.bat
include.01
include.02

You may use the files **include.01** and **include.02** as @ files with the following commands:

- Backup File List.
- Verify File List.
- Restore File List.
- Restore Disk List.
- Select Include.
- Select Exclude.

This feature is convenient because you do not have to enter the same list of files each time you want to use them during a SY-TOS session. All you need to specify is the batch file with the .01 (.02, .03, etc.) extension preceded by the @ symbol.

The following example illustrates how to create a batch file which will be used as an @ file.

Procedure

1. From the directory where the SY-TOS files reside, type **STBATCH** and press **<Enter>**.

   The ST-BATCH display appears on the screen. You are prompted for a batch filename.

2. Type **INCLUDE** and press **<Enter>**.

3. Select the **Set Select Include** command.

   ST-BATCH displays the following prompt:

   ```
   Enter FILENAMES, (press <Enter> for
   directory):
   ```

4. You have the following options:

   - You may enter the list of files that you want to include and press **<Enter>**. Remember to give the complete pathnames. You may specify a maximum of 80 characters.
   - You may also press the **<Enter>** key at the prompt to select the files using the easy-list file selection method. You may specify a maximum of 40 files and/or directories.

     NOTE
     If you select the files using the easy-list file selection method, you might need to specify the Set Path or Set Disk command to change the disk and directory to the ones you want.

After you specify the files you want to include, ST-BATCH displays them in the MESSAGES window and updates the SELECT window to reflect the change.

5. Choose the **Quit** command.

   ST-BATCH prompts you to save the batch session.

6. Press **<Enter>** to save the session and exit ST-BATCH.

You have now created a batch file called **include** that contains a list of files. If you were to use the DOS DIR command to display the files that ST-BATCH just created, you would see the following files:

include
include.01
include.bat

You can remove the **include** and **include.bat** files from your directory if you will not be needing them. The **include.01** file contains the list of files you selected in the ST-BATCH session. If you were to specify **TYPE INCLUDE.01**, you would see the list of files displayed on the screen.

You may now use this **include.01** file at any time as an @ file. For example, at the Backup File List prompt in the Advanced menu system, all you would need to enter would be the following:

```
Enter FILENAMES, (press <Enter> for
directory):@C:\SYTOS\INCLUDE.01
```

The list of files would appear in the MESSAGES window and SY-TOS would back up all the files listed in the **include.01** file.

You may also include the batch file with the .01, .02, etc. extension within another batch file.

Chapter 8. The SY-CLOCK Automatic Timed Backup Utility

An Overview

The SY-CLOCK utility is a multi-function "software alarm clock" that allows SY-TOS batch files or any other executable DOS programs to execute at a predetermined time during any specified day, completely unattended.

Before SY-CLOCK can execute a program, you must first set the day and time. SY-CLOCK records each filename as an event by displaying its "wake up" time inside the weekly Calendar. You may then select the Install command to turn on SY-CLOCK.

After establishing a calendar of events, installing SY-CLOCK and then exiting the utility, the software will proceed to execute each event at its associated date and time as long as the computer remains on. At "wake up" time, SY-CLOCK will sound an alarm consisting of three distinct tones. You will need to return the system to the DOS command prompt so that the scheduled event can take place. As long as you remain in a program, SY-CLOCK will issue a low-level tone approximately every 60 seconds until you return to the DOS command prompt.

Make sure the time and date are set properly on your system for reliable operation.

Installing the SY-CLOCK Utility

Although SY-CLOCK appears on a separate diskette labelled "SY-CLOCK Unattended Software Administrator," you do not have to install it separately. The ST-INSTAL utility will prompt you for the SY-CLOCK diskette when you install SY-TOS.

Using the SY-CLOCK Utility

To use the SY-CLOCK utility, make sure you are in the directory where the SY-CLOCK files are installed. Type

SYCLOCK and press **<Enter>**.

The SY-CLOCK utility will appear on your screen.

You may use the commands at any time to change or display the information recorded in the Calendar. You may press the <F2> function key at any time to display help on the highlighted command or any of the fields where the selection cursor is positioned.

The SY-CLOCK Screen Display

When you first access the SY-CLOCK utility, your screen looks like Figure 8-1.

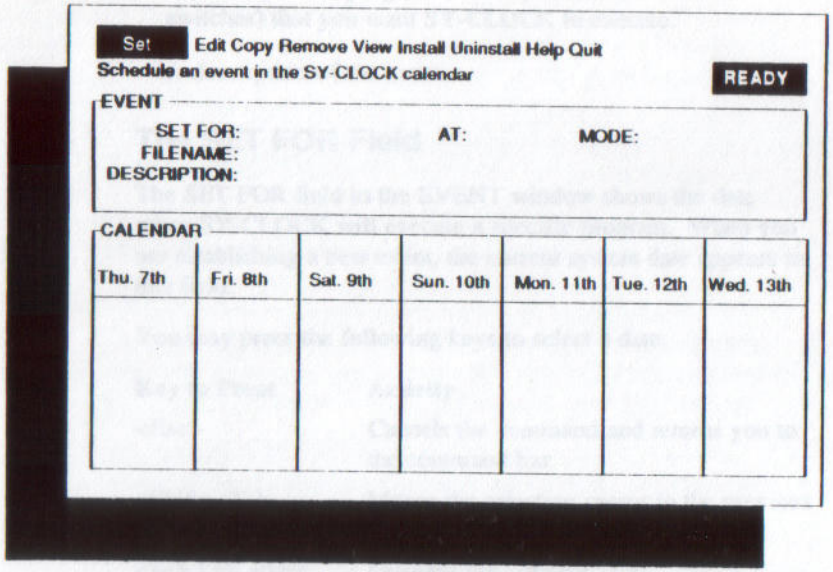

Figure 8-1 The SY-CLOCK Screen Display

The following sections describe the screen layout.

STATUS Indicator

The word READY appears at the upper-right corner of the screen. This serves as an indicator which confirms that SY-CLOCK is ready to accept your commands. When SY-CLOCK needs additional information from you, SY-CLOCK changes the indicator to INPUT. The indicator changes to WAIT as SY-CLOCK stores information and to HELP when you request help.

Command Bar

A horizontal list of commands appears at the top of the screen. We refer to this line as the *command bar*. Reverse video serves as a *selection cursor* to highlight one command at a time. A description appears below the highlighted command.

Selecting a Command

To select a command, you move the selection cursor to highlight the command and then press **<Enter>**. You may press the following keys to move the selection cursor to highlight and then select a command:

Key to Press	Activity
<End>	Highlights the last command.
<Enter>	Selects the highlighted command.
<Home>	Highlights the first command.
<←> Left arrow or <←> Backspace	Highlights the command to the left, wrapping around to the last command when you have reached the first command.
<→> Right arrow or <Space Bar>	Highlights the command to the right, wrapping around to the first command when you have reached the last command.

You may also type the first letter of a command to select it. For example, press the <S> key for the Set command.

Error Messages

When an error occurs during a SY-CLOCK event, the utility will display an error message above the EVENT window. You may press the <F2> function key to receive help on the displayed message.

EVENT Window

The EVENT window is the area where you specify the following:

- The date for the specified program to be executed.
- The "wake up" time for the specified event.
- Whether you want SY-CLOCK to execute the program once or each week on the same day and time.
- The name of the program (and any associated SY-TOS switches) that you want SY-CLOCK to execute.
- A description of the event.

The SET FOR Field

The SET FOR field in the EVENT window shows the date when SY-CLOCK will execute a specific program. When you are establishing a new event, the current system date appears in this field.

You may press the following keys to select a date:

Key to Press	Activity
<Esc>	Cancels the command and returns you to the command bar.
<Shift><Tab>	Moves the selection cursor to the previous field.
<←> Left arrow or <←> Backspace	Displays the previous day.
<→> Right arrow or <Space Bar>	Displays the next day.
<Tab>	Accepts the displayed date and moves the selection cursor to the time field.

NOTE
If the COUNTRY command in the DOS CONFIG.SYS file has been set, the date will appear in the specified country's format.

The AT Field

The AT field shows the time of day when you want SY-CLOCK to execute a program. When you are creating a new event, the current system time appears in this field.

To select a time, press the following keys:

Key to Press	Activity
<Esc>	Cancels the command and returns you to the command bar.
<←> Left arrow or <←> Backspace	Displays the previous hour or minute. When it reaches 1, SY-CLOCK displays 12 for the hour. When it reaches 0, SY-CLOCK displays 59 for the minute.
<→> Right arrow or <Space Bar>	Displays the next hour or minute. When it reaches 12, SY-CLOCK wraps to 1 for the hour display. When it reaches 59, SY-CLOCK wraps to 0 for the minute display.
<Shift> <Tab>	Moves the selection cursor to the previous field.
<Tab>	Moves the selection cursor to the minute or am/pm field. If the selection cursor is at the am/pm field, pressing <Tab> will accept the displayed time and move the cursor to the MODE field.

To quickly select a time, you may type the specified time. For example, suppose you want to enter 12:30 pm as the "wake up

time" for an event. You would follow these steps at the time prompt:

1. Type **1** and then **2**.

2. Press the <**Tab**> key.

3. Type **3** and then **0**.

4. Press the <**Tab**> key.

5. Press either the <←> or <→> key to specify am or pm.

You may also interchange typing numbers and pressing keys to select a time for an event. For example, suppose you typed 3 and 0 at the minute field and then pressed the <→> key. SY-CLOCK would display 31 at the minute field.

> **NOTES**
> If you have set the country code in the DOS CONFIG.SYS file, SY-CLOCK will use that country's time format.
>
> You select the time as previously described; however, the hour field may range from 0 - 23, and the am/pm field does not appear. Consequently, upon pressing the <Tab> key at the minute field, the selection cursor moves to the MODE field.

The MODE Field

There are two modes that SY-CLOCK operates under: Specific and Perpetual. When you select the *Specific* mode, SY-CLOCK executes a program on the date and time displayed in the EVENT window. It will then remove the event from the Calendar. When you choose the *Perpetual* mode, SY-CLOCK executes the program on the same day and time each week until you change the mode or time, or remove it from the Calendar.

The MODE field acts like a toggle switch. Simply press the <→> or <**Space Bar**> and <←> or <←> (Backspace) keys to select Perpetual and Specific, respectively. The <**Tab**> key accepts the displayed MODE setting and moves the selection cursor to the FILENAME field. The <**Shift**> <**Tab**> keys move the selection cursor to the previous field. The <**Esc**> key cancels the command and returns you to the command bar.

The FILENAME Field

The FILENAME field displays the name of the program. When you are specifying a new program name, this field will be blank.

Depending upon the location of the batch file or program, you may need to specify a partial or complete pathname. You can use a maximum of 125 characters in this field. When specifying a filename that has an extension, remember to include it. For example:

```
FILENAME:C:\SYTOS\TUESDAY.BAT
```

When there are switches associated with a program that you want SY-CLOCK to execute, you must place them after the complete pathname and separated by a space. For example:

```
FILENAME:C:\SYTOS\SYTOS.EXE -BFS DAILY -
-VFS -Q
```

After you type the filename, press <**Tab**> to move to the DESCRIPTION field. If you press <**Enter**>, SY-CLOCK will record the event in the Calendar and return the selection cursor to the command bar. Pressing the <**Shift**> <**Tab**> keys would move the selection cursor to the previous field. Pressing <**Esc**> would cancel the command.

If you make a mistake typing the filename, use the <←> (Backspace) key to erase the characters or select the Edit command to change the name.

If the file you specify does not exist, SY-CLOCK will display the following:

```
File does not exist. <Enter> to retain,
<Esc> to re-type
```

You may press <**Esc**> to type a new name. If you press <**Enter**> to keep the file, you will need to create the file in order for SY-CLOCK to execute it.

Instead of typing a filename, you can use SY-CLOCK's easy-list file selection feature. This option displays files contained on the current directory and disk that have a **.exe**, a **.bat** and a **.com** extension. You can use the pointers to mark the file. You can even scan subdirectories to search for a file.

To use the easy-list file selection method, press the < ↑ > key at the FILENAME field. SY-CLOCK will then display the files within the current disk directory.

You may press the following keys to select the file you want:

Key to Press	Activity
<← → ↑ ↓ >	Moves the pointers to the left, right, up or down the list.
<Ctrl> <PgDn>	Displays a subdirectory when the pointers are located on a subdirectory name.
<Ctrl> <PgUp>	Displays the parent directory.
<Enter>	Records the filename you marked and returns you to the SY-CLOCK command bar.
<Esc>	Cancels the command.
<PgDn>	Displays the next page of a multi-page list.
<PgUp>	Displays the previous page when one exists.
<Tab>	Records the filename you marked and moves the selection cursor to the DESCRIPTION field.

NOTE
As you move the pointers from file to file, SY-CLOCK displays the selection in the EVENT window.

The DESCRIPTION Field

The DESCRIPTION field displays an explanation of the specified event. When you are establishing a new event, the field is blank. The description may be up to 60 characters in length. It is a good idea to include a description so that you can quickly identify an event when viewing the Calendar. Upon pressing <Enter> at this field, SY-CLOCK will record the "wake up" time in the Calendar. To return to the previous field, press the <Shift> <Tab> keys. To return to the first field, press the <Tab> key. To cancel the current command, press the <Esc> key.

CALENDAR Window

The CALENDAR window displays the current week, starting with the current day, and lists the entries for each day. You may have a maximum of 10 entries for each day and may schedule up to a week in advance. It is from the CALENDAR window that you select the event to edit, copy, display or delete. To select an event, you must first move the selection cursor to highlight it and then press <Enter>.

You may use the following keys to move the selection cursor from event to event in the CALENDAR window:

Key to Press	Activity
< ↓ > Down arrow	Moves the selection cursor down the column one event at a time until it reaches the last one.
<End>	Moves the selection cursor to the last event in the column.
<Enter>	Places the selection cursor in the EVENT window when using the Edit command. When viewing the Calendar, <Enter> returns you to the command bar. When clearing an event, <Enter> causes SY-CLOCK to display a confirmation prompt.
<Esc>	Exits the CALENDAR window and returns the selection cursor to the command bar.
<Home>	Moves the selection cursor to the first event in the column.
<← > Left arrow	Moves the selection cursor to the previous column on the same row. If there isn't an event at that location in the previous column, SY-CLOCK will move the selection cursor to the last available event in the previous column. If a column does not have entries, SY-CLOCK will move to the previous column.

<→> Right arrow	Moves the selection cursor to the next column on the same row. If there isn't an event at that location in the next column, SY-CLOCK will move the selection cursor to the last available event in the next column. If the column does not have entries, SY-CLOCK will move to the next column.
< ↑ > Up arrow	Moves the selection cursor to the top of the column one event at a time until it reaches the first one.

Moving around the Calendar

As you move the selection cursor from event to event in the Calendar using the View command, SY-CLOCK displays information for the highlighted "wake up" time in the EVENT window. You can quickly scan the FILENAME and DESCRIPTION fields to see the batch file or program that is associated with the "wake up" time.

For example, suppose you have the following entries in the Calendar as illustrated in Figure 8-2.

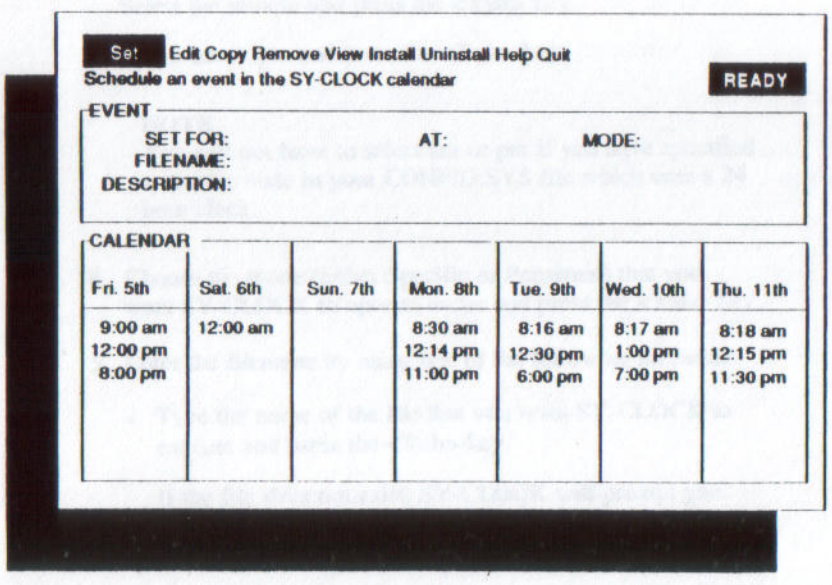

Figure 8-2 Example of Calendar Entries

You highlight the event on Monday the 8th at 12:14 pm. SY-CLOCK displays the information associated with the highlighted entry in the EVENT window. Your screen might now look like Figure 8-3.

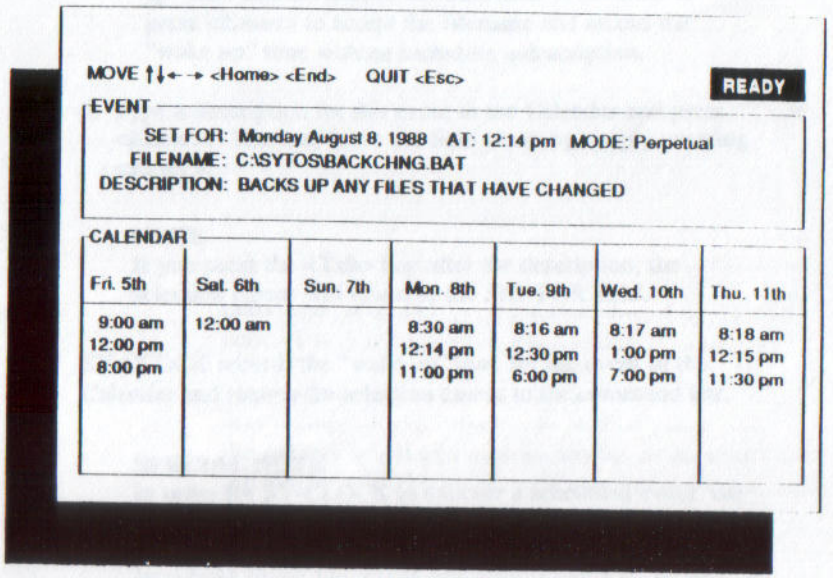

Figure 8-3 Example of a SY-CLOCK Screen Display

If you were to highlight an event in the Calendar for Tuesday the 9th, SY-CLOCK would display information relating to that "wake up" time in the EVENT window.

SY-CLOCK Commands

When using the SY-CLOCK utility, you can install and uninstall it, specify events to take place at future times, edit information associated with an existing time, copy an event to a different date, remove an event from the Calendar or view the events recorded in the Calendar. You may also display help for any highlighted command or field where the selection cursor is positioned by pressing the <F2> function key.

The following sections explain how to use each command.

Set Command

The Set command allows you to specify a new "wake up" time for an event to take place. You may have a maximum of 10 events for each day and you may schedule up to a week in advance.

Procedure

1. Choose Set from the command bar.

   SY-CLOCK moves the selection cursor to the EVENT window.

2. Select the day when you want the event to take place and press the <Tab> key. (It may be up to a week in advance.)

   Note that at any time you may press <Esc> to cancel the Set command.

3. Specify the time you want to execute the desired program.

   Select the hour and press the <Tab> key.

   Select the minute and press the <Tab> key.

   Select am or pm and press the <Tab> key.

   NOTE
   You will not have to select am or pm if you have specified a country code in your CONFIG.SYS file which uses a 24 hour clock.

4. Choose the mode (either Specific or Perpetual) that you want SY-CLOCK to operate under and press the <Tab> key.

5. Enter the filename by using one of the following methods:

   - Type the name of the file that you want SY-CLOCK to execute and press the <Tab> key.

     If the file does not exist, SY-CLOCK will prompt you. You may press <Enter> to accept it or <Esc> to retype the filename.

   - Press the < ↑ > key to use the easy-list file selection method to mark the file you want SY-CLOCK to execute.

     Refer to The FILENAME Field section for information on how to use this feature.

     Press <Tab> to accept the filename, record the "wake up" time and advance to the DESCRIPTION field or press <Enter> to accept the filename and record the "wake up" time without including a description.

6. Type a description for this event in the Calendar and press <Enter>. You may leave the field blank by simply pressing <Enter>.

   NOTE
   If you press the <Tab> key after the description, the selection cursor will return to the SET FOR field.

SY-CLOCK records the "wake up" time for the event in the Calendar and returns the selection cursor to the command bar.

SPECIAL NOTE
In order for SY-CLOCK to execute a scheduled event, the computer must be turned on, the DOS command prompt displayed on the screen, and SY-CLOCK must be installed.

Edit Command

The Edit command allows you to change information associated with a "wake up" time recorded in the Calendar.

Procedure

1. Choose Edit from the command bar.

   SY-CLOCK moves the selection cursor to the first event in the CALENDAR window. Information associated with the highlighted entry appears in the EVENT window.

2. Move the selection cursor to the event that you want to edit and press <Enter>.

   SY-CLOCK moves the selection cursor to the SET FOR field in the EVENT window where information associated with the highlighted event in the CALENDAR window appears.

3. Select a new date and press the <Tab> key.

To keep the existing information, press the <Tab> key.

SY-CLOCK moves the selection cursor to the AT field.

NOTE
While editing the EVENT window, you may press <Enter> at any time to accept the information displayed in the window and return to the command bar.

4. Select the new hour and press the <Tab> key.

   Select the new minute and press the <Tab> key.
   Select am or pm and press the <Tab> key.

   To keep the current time, press the <Tab> key three times.

   NOTE
   You will not have to select am or pm if you have specified a country code in your CONFIG.SYS file which uses a 24 hour clock.

   SY-CLOCK moves the selection cursor to the MODE field.

5. Select a different mode and press the <Tab> key.

   To keep the current mode, press the <Tab> key.

   SY-CLOCK moves the selection cursor to the FILENAME field.

6. Enter a new filename by using one of the following methods:
   - Type the filename and press the <Tab> key.
   - Press the <↑> key to use the easy-list file selection to mark the file you want SY-CLOCK to execute. Refer to The FILENAME Field section for information on how to use this feature.
   - To keep the current name, press the <Tab> key.

   SY-CLOCK moves the selection cursor to the DESCRIPTION field.

7. Type a new description and press <Enter>.

   To keep the current description, press <Enter>.

SY-CLOCK records the new information in the Calendar and returns the selection cursor to the command bar.

Copy Command

The Copy command allows you to copy a "wake up" time and its associated event to a different date.

Procedure

1. Choose Copy from the command bar.

   SY-CLOCK moves the selection cursor to the first event in the CALENDAR window. Information associated with the highlighted event appears in the EVENT window.

2. Move the selection cursor to the event that you want to copy and press <Enter>.

   SY-CLOCK moves the selection cursor to the SET FOR field in the EVENT window where information associated with the highlighted event in the CALENDAR window appears.

3. Select the date you want to copy the displayed event information to and press <Enter>.

   SY-CLOCK copies the highlighted event to the specified date and returns the selection cursor to the command bar.

NOTES
- When you want to change the information for the highlighted event, choose the Edit command.
- You cannot copy an event to the same day. For example, suppose you have an event scheduled for Friday, November 4. The date you select in the SET FOR field must occur either before or after November 4th.

Remove Command

The Remove command allows you to delete an existing event in the Calendar.

Procedure

1. Choose **Remove** from the command bar.

   SY-CLOCK moves the selection cursor to the first event in the CALENDAR window. Information associated with the highlighted event appears in the EVENT window.

2. Move the selection cursor to highlight the event that you want to remove and then press <Enter>.

   SY-CLOCK displays the following prompt:

   ```
   Confirm. Do you wish to REMOVE this
   event? (Y/N) [N]
   ```

3. Type **Y** and press <Enter>.

   SY-CLOCK removes the event from the Calendar and returns the selection cursor to the updated CALENDAR window. You may select another event to delete or press <Esc> to return to the command bar.

   When the event you removed is the last one in the Calendar, SY-CLOCK returns the selection cursor to the command bar and notifies you that the Calendar is empty.

   NOTE
   If you decide not to remove a highlighted event, SY-CLOCK will return the selection cursor to the CALENDAR window.

View Command

The View command allows you to easily view the events recorded in the Calendar. You cannot change or remove the information displayed in the EVENT and CALENDAR windows.

The View command is useful if you forget the information associated with a "wake up" time in the Calendar. You can quickly scan the Calendar to review the events that SY-CLOCK will execute.

Procedure

1. Choose **View** from the command bar.

   SY-CLOCK moves the selection cursor to the CALENDAR window and displays information associated with the highlighted event in the EVENT window.

2. Move the selection cursor to highlight the event you want to review.

   SY-CLOCK displays the information in the EVENT window.

3. Repeat Step 2, or press <Esc> or <Enter> to return to the command bar.

Install Command

The Install command allows you to turn on SY-CLOCK so that it can execute programs that have been scheduled in the Calendar.

You may add new events or edit existing ones while SY-CLOCK is installed. Remember that SY-CLOCK does not execute a scheduled event until the DOS command prompt is displayed.

Procedure

1. Select **Install** from the command bar.

Once you exit the SY-CLOCK utility, SY-CLOCK will monitor the "wake up" times and execute any programs at their designated times. It will remain installed until you either select the Uninstall command or turn off the computer.

NOTE
Because SY-CLOCK is automatically uninstalled when the computer is turned off, you will need to select the Install command upon turning on the computer. You may also place this command in your AUTOEXEC.BAT file so that SY-CLOCK will automatically be installed when you turn on your computer. See the section entitled Turning SY-CLOCK on and off at the DOS Command Prompt later in this chapter for more information.

Uninstall Command

The Uninstall command stops SY-CLOCK from monitoring the "wake up" times in the Calendar and thus executing scheduled programs.

This command can be useful when you want to quickly cancel an event before it takes place. For example, suppose you have scheduled five programs for SY-CLOCK to execute in one day and four have already been completed. You may use the Uninstall command to cancel the fifth program before its scheduled time occurs. Note that SY-CLOCK is automatically uninstalled when you turn off the computer.

Procedure

1. Select **Uninstall** from the command bar.

SY-CLOCK will no longer execute any programs recorded in the Calendar. You may still use any of the commands to set new times, edit existing information or even re-install SY-CLOCK.

NOTE
You may also uninstall SY-CLOCK at the DOS command prompt. See the section entitled Turning SY-CLOCK on and off at the DOS Command Prompt later in this chapter for more information.

Help Command

The Help command describes how to use the on-line help facility in the SY-CLOCK utility.

To display help text, follow these steps.

Procedure

1. Move the selection cursor to highlight the command for which you want help.

2. Press the <F2> function key.

   Help text pertaining to the highlighted command appears on the screen.

3. You may press the <PgDn> or <PgUp> key to scroll text on to the screen when it exists.

   Press <Esc> to exit the help facility.

NOTES

- In addition, you may press the <F2> function key at any field where the selection cursor is positioned to display help on that field.

- Help on error messages is also available in SY-CLOCK. Upon receiving an error message, you may press the <F2> function key. Help text explaining the error will appear on the screen.

Quit Command

The Quit command allows you to exit the SY-CLOCK utility. SY-CLOCK will save any changes to existing entries or additions in the Calendar.

Procedure

1. Choose **Quit** from the command bar.

SY-CLOCK saves any changes you have made to the Calendar and returns you to the DOS command prompt. If you have selected the Install command, you will receive a message stating that SY-CLOCK is installed.

Executing a Program Recorded in the Calendar

When it is time to execute a program recorded in the Calendar, SY-CLOCK sounds an alarm. At the DOS command prompt, it displays the following:

```
SY-CLOCK is ready to execute <PROGRAM
NAME> Press <Alt><Shift> to cancel
```

SY-CLOCK gives you approximately 10 seconds to press the <Alt> and the left or right <Shift> key combination to cancel the event. Otherwise, it proceeds to execute the program. This feature is useful because you do not have to be present when SY-CLOCK executes a program. For example, you could

specify SY-CLOCK to execute a SY-TOS batch file at midnight each day. You would then be able to back up each day's activity without being present as long as the computer remains on and SY-CLOCK is installed.

When you are using a program and it is time for SY-CLOCK to execute an event, SY-CLOCK will issue a low-level tone approximately every 60 seconds until you return to the DOS command prompt. When you exit to the DOS command prompt, SY-CLOCK will display the message stating that is ready to execute.

Turning SY-CLOCK On and Off at the DOS Command Prompt

You do not have to be using the SY-CLOCK utility in order to install or uninstall it. However, you must be in the directory where the SY-CLOCK files are installed. For example, if your SY-CLOCK files were in the syclock directory, you would type the following at the DOS command prompt:

To install SY-CLOCK type

C:\SYCLOCK>SYCLOCK -I and press **<Enter>**.

To uninstall SY-CLOCK type

C:\SYCLOCK>SYCLOCK -U and press **<Enter>**.

You may also place the **syclock -i** command format in the AUTOEXEC.BAT file located in the root directory. However, you must first change the directory in AUTOEXEC.BAT to the directory where the SY-CLOCK files reside. For example, if the SY-CLOCK files are located in your syclock directory, your AUTOEXEC.BAT file should look like this:

```
...
CD\SYCLOCK
SYCLOCK -I
CD\
...
```

When you restart DOS, the command processor will automatically install SY-CLOCK for you. Refer to your *Disk Operating System* user's manual for information on how to create and use an AUTOEXEC.BAT file.

Appendix A. Taking Care of Your Tapes

This appendix lists some suggestions for taking care of your tapes to ensure maximum performance.

- Never touch the tape surface; always handle the tape cartridge.
- Keep tapes away from magnetic fields (for example, monitors, motors, televisions, and magnetic paper clip holders). Magnetic fields can scramble and erase information on a tape.
- Insert the tape into the tape drive carefully.
- Always return the tape to the plastic case when you are not using it.
- Do not leave a tape in the tape drive when you are not using SY-TOS.
- Store the tape in a safe place when not using it.
- Do not use a tape when the temperature is below 50 degrees or above 120 degrees. Do not leave a tape in the glove compartment of a car and forget about it. Extreme temperature changes can damage it.
- Periodically use the Set Tape Retension command to wind and rewind the tape.

If you suspect a tape is wearing out, execute a Backup command using that tape. If the backup operation doesn't execute properly, the tape is probably worn out.

If the backup is successful, set the tape aside for a few hours. Later verify the information on the tape to that on the disk. If you have not changed the information on the disk and the files do not verify, then the magnetic coating on the tape is too worn to be reliable. Throw the tape away.

Non-Network Environment	Network Environment
Backup File List	Backup List
Backup File Selected	Backup Selected
Directory Tape File List	Directory Tape List
Directory Tape File Selected	Directory Tape Selected
Restore File List	Restore List
Restore File Selected	Restore Selected
Verify File List	Verify List
Verify File Selected	Verify Selected

Backing up Files under a Network

If you are not logged in to the network as Supervisor or Administrator, you may only access those files and directories to which you have been assigned access rights.

For maximum performance when backing up a file server, we recommend that you log in as Supervisor or Administrator and make sure that no one else is using the network, *especially when you are running SY-TOS from a floppy diskette*. This procedure will guarantee that you will have access to all files and will provide a complete backup.

However, SY-TOS does allow for backup operations when users are accessing files. SY-TOS will try to back up all specified files and will pass over any locked files. SY-TOS records the names of any files that are locked so that it can try again later to back them up. At the end of the backup operation, SY-TOS will attempt to back up those files that were previously locked. If SY-TOS cannot back up those files because they are still locked, it will display their names in the MESSAGES window.

SPECIAL NOTES

- If you are running SY-TOS from a floppy diskette, make sure that no one is using the network. When operating in a network environment, SY-TOS must create files which record the names of any locked files so that it can try again later to back them up. If the floppy diskette you are using is almost full, SY-TOS may not be able to create these files and the locked files will not be backed up. Making sure that no one is using the network will ensure a complete backup.

- The Backup List/Selected (network) and Backup File List/Selected (non-network) commands are designed to back up files only. Therefore, these commands will not back up an empty directory if it is at the bottom of a tree structure. (If its parent directory is also empty, it will not be backed up either.) If you wish to include these types of directories, you should shut the network down, reboot the system under DOS, and select SY-TOS' Backup Disk command. (In this situation, SY-TOS must be installed on the fileserver.) If you are running under NetWare, see the section later in this chapter entitled *Special Considerations when Running Under NetWare*.

When running SY-TOS in batch mode, you may not be present to view the verification and/or error messages that SY-TOS displays on the screen. Therefore, you may want to open SY-TOS' Journal using the Options Journal Begin command in order to record any error messages that may occur or the names of files that could not be backed up because they were locked. You may then review the Journal file at any time.

To back up files on a local disk drive (not a shared drive), you must set Configure Network to No in the ST-CONFIG utility before selecting the Backup commands.

Restoring Files under a Network

Before restoring files, you may want to select the Directory Tape List or Directory Tape Selected commands to ensure that the files you intend to restore exist on the tape. By viewing the files on the tape you will also be able to determine the exact pathnames to the desired files. Be sure you specify exact pathnames *including the disk letter* of the files you intend to restore. This is especially important in a networking environment because files with the same names may exist in different locations within the network.

CAUTION
Make sure that no other users are logged in when you are restoring network system files or other shared program or data files.

Special Considerations when Running under NetWare

If you want to install SY-TOS on a non-dedicated file server, we recommend that you first create a DOS partition on the file server and install SY-TOS on this partition. You may then run SY-TOS from the non-dedicated file server.

File and directory names exceeding the DOS eight character limit should be avoided. Their use prevents NetWare backups from being restored to DOS environments. Inconsistent results may also be obtained trying to restore backups containing such files or directories under NetWare.

Backing up Files

Please read the following information carefully before backing up files under the NetWare environment.

Temporary Files

There are three files that are intentionally not backed up under the NetWare environment. They are NET$SPL.QUE, NET$MSG.SYS and DIRSTAMP.SYS. These are temporary files which do not need to be saved.

User and Group Security Information

In order to back up the user and group security information recorded in the \SYSTEM\NET$BIND.SYS and \SYSTEM\NET$BVAL.SYS files, you must log in to the network as Supervisor or you must have Supervisor rights. It is important that these files are backed up in the event that a full system restore is required. If these files are not on the backup tape, all security information will have to be recreated after the restore operation.

Empty Directories

The Backup List and Selected commands are designed to back up files only. Therefore, these commands will not back up an empty directory if it is at the bottom of a tree structure. (If its parent directory is also empty, it will not be backed up either.) If you wish to include these types of directories so that their trustee rights and other information are preserved, you must create a file (even if it is 0 bytes in size) in the last subdirectory of this particular tree structure.

Restoring Files

Please read the following information carefully before restoring files under the NetWare environment.

User, Group, and Directory Information

When restoring directories, SY-TOS allows you to specify whether you want to globally preserve or overwrite directory trustee rights and directory information that exist on disk.

After selecting the Restore commands you will see the following prompt:

```
Type <Y> to PRESERVE ALL DIRECTORY RIGHTS
on disk, <N> to OVERWRITE [ Y ]
```

If you type <Y>, the directory rights that exist on disk will not be overwritten when the directories are restored to the disk. This option is useful if directory rights have changed since the backup and you need to restore the contents of the directories without losing the new trustee rights.

If you type <N>, the rights recorded on tape will be restored to disk. This option is useful if you need to restore both the directories AND their access rights. Any trustees added to a directory after the backup operation (which therefore do not exist on the backup tape) will not be overwritten when the directory information is restored to disk. If, after the restore operation you no longer want these new trustees to exist, they must be removed through NetWare.

For example, suppose there was a directory called \TEST which was backed up to tape. After the backup operation, the following changes were made to the trustees and rights on disk:

user Dave was added, user Kerry was removed, and the rights were modified for both user Denise and user Stephen. Figure B-1 shows the differences between the new rights on disk and those on the backup tape.

Trustees	Rights on Disk	Rights on Tape
Denise	R,W	R,W,M
Stephen	S	R,W,P,M
Kerry	Not a Trustee	R,W
Dave	R,W,C	Not a Trustee

Figure B-1 \TEST directory rights on disk and tape before a restore operation.

Figure B-2 shows the resulting directory trustees and rights on disk after restoring information from the backup tape. Situation 1 will occur if <Y> is chosen at the restore preserve/overwrite prompt, Situation 2 will occur if <N> is chosen instead.

Trustees	Situation 1: Type <Y> to Preserve Disk Rights	Situation 2: Type <N> to Overwrite Disk Rights
Denise	R,W	R,W,M
Stephen	S	R,W,P,M
Kerry	Not a Trustee	R,W
Dave	R,W,C	R,W,C

Figure B-2 \TEST directory rights on disk after a restore operation.

In Situation 1, the trustee rights for \TEST are preserved exactly as they exist on disk. In Situation 2, all trustees and their corresponding rights are restored from tape. At this time, user Kerry is re-created on disk with the same rights that existed on tape. Because user Dave does not exist on the backup tape, there is no information to replace his rights on disk. Therefore, his rights on disk remain unchanged after the restore operation.

This feature also offers you the flexibility of recovering the rights from only one or a few of the directories you are restoring from tape. To do so, follow these steps:

1. Restore the directories whose rights you want to *preserve on disk* by choosing the SY-TOS Set Select Include command and specifying those directories. Be sure to set the Set Select Trees command appropriately and then choose the Restore Selected command. When the preserve/overwrite prompt described earlier in this section is shown, type <Y> to preserve directory information as it exists on disk.

2. Restore the directories whose rights you wish to *copy from tape* by choosing the SY-TOS Set Select Include command and specifying those directories. Again, be sure to set the Set Select Trees command correctly and then choose the Restore Selected command. When the preserve/overwrite prompt described earlier in this section is shown, type <N> to overwrite the directory information as it exists on disk.

Complete System Restore

When restoring a *complete system*, we recommend you follow these steps. This procedure allows NetWare to distinguish all files and directory security correctly.

1. Make sure that the hard disk is Novell compatible and then restore *only* the \SYSTEM directory from tape using the appropriate command: Restore Selected or Restore List. Use the Set Select Include command to specify this directory when using the Restore Selected command. Type <Y> at the preserve/overwrite prompt to preserve directory information for \SYSTEM as it exists on disk.

2. Reboot the file server to initialize the new system files you have just restored. Then restore all information from the tape (including the \SYSTEM directory) using the Restore Selected command. Type <N> at the preserve/overwrite prompt to overwrite any directory information as it exists on disk.

   Any trustees added to a directory after the backup operation (which therefore do not exist on the backup tape) will not be overwritten when the directory information is restored to disk. If, after the restore operation, you no longer want these new trustees to exist, they must be removed using the appropriate NetWare utility.

See the previous section entitled *User, Group, and Directory Information* for an explanation of the preserve/overwrite prompt.

Non-existent or Deleted Users

When the Supervisor adds a user to the system, NetWare assigns the user an ID number. The files and directories subsequently created by the user are assigned to his/her number. Each user may be assigned a different ID number in other NetWare file systems.

Therefore, when attempting to restore files to a different file server in which a user ID number recorded on tape is not defined or, when restoring to the original system after the owner of a directory has been removed, the following will occur.

If the system being restored to is running NetWare version 2.0A, SY-TOS will display the following prompt:

```
DIRECTORY OWNER DOES NOT EXIST, Press
<Enter> to CONTINUE, or <Esc> to ABORT.
```

Press <Enter> to restore the files in this directory and associated subdirectories with the current user as owner, assigned to the user group EVERYONE, with maximum trustee access rights. If necessary, each directory's access rights may later be changed using the appropriate NetWare utility.

Or, press <Esc> to discontinue the restore operation and return to the SY-TOS Advanced menu system.

If the system being restored to is running NetWare version 2.1 or later, the above prompt will be displayed if you *do not* have "Modify File Name/Flags" rights.

However, if you have "Create New Files", "Parental" and "Modify File Name/Flags" rights, the prompt shown above will not be displayed and the directory will *automatically* be restored with the current user as owner, assigned to user group EVERYONE, with maximum trustee access rights. If necessary, each directory's access rights may later be changed using the appropriate NetWare utility.

Reboot after Restore

Because NetWare remains in memory during restore operations, we strongly recommend that you reboot the system after executing a Restore command. This will ensure that NetWare is updated with respect to the information on disk that has been restored (such as changed "rights"), thereby preventing possible data corruption or loss.

Special Considerations when Running under IBM PC LAN

Because the SERVER configuration of IBM PC LAN Program versions 1.2 and 1.3 requires a large amount of memory, it is suggested that SY-TOS be installed and executed only from systems configured as REDIRECTOR, RECEIVER and/or MESSENGER.

If you attempt to execute SY-TOS from a system configured as SERVER, one of the following messages will be displayed at the DOS command prompt:

```
Fatal error during initialization
Not enough memory for buffer system
```

or

```
Program too big to fit in memory.
```

Notes

Appendix C. Problem Solving

Sytron's Software Support Services

To qualify, at no additional charge, for membership to Sytron's full Software Support Services, please complete the Software Support Membership Form included in the SY-TOS package within thirty (30) days of purchase.

Please take the time to complete this form as it will provide us with information to help improve our products to better meet your needs.

Upon Sytron's receipt of this completed form, Sytron shall promptly send you a kit including a member access telephone number allowing you direct entry into Sytron's Software Support Services. You shall also be entitled to advance notices on product updates and enhancements.

Once you have received your member access telephone number, record the telephone number in the space provided below for convenient reference:

_____

In the event that you need assistance from Sytron's Software Support Staff, please be prepared to provide the following information when you call. You may want to record the product information in the spaces provided below:

General Information:

Your name

Company name

Phone number

Software Registration Number _____
(located on bottom of Membership Form/License Agreement)

Product Code _____
(located on SY-TOS Distribution Diskette)

Tape system hardware manufacturer _____

Tape controller model number _____

Operating System version _____

Network Specific Information:

Network: Type _____

Software Version _____

File Server: Disk Capacity _____

RAM _____

Network Hardware _____

Where is SY-TOS installed? _____

Sytron will be unable to provide support to unregistered customers.

Problem Solving

The following sample cases list possible causes and suggested solutions for errors that may occur while executing SY-TOS. The list is separated alphabetically into general problems that you may encounter while running SY-TOS and those that may arise while operating SY-TOS under a network.

If you should encounter a problem, please read the following sections carefully before calling Sytron's Software Support Division.

General Problems/Solutions

Problem: SY-TOS backup, verify, and restore operations are slow to perform.

Causes: There is not enough system memory available, or not enough buffers have been allocated under DOS' CONFIG.SYS file.

Solution: For maximum performance, 640KB of conventional memory should be available upon execution of the SY-TOS program. Use the DOS command CHKDSK to view how much system memory is available for SY-TOS. Increase system memory (up to 640KB) or remove any overhead or "memory resident" programs that may be taking system memory away from SY-TOS.

To improve performance, you may also want to increase the number of buffers specified in the CONFIG.SYS file. (Create the CONFIG.SYS file if it does not exist.) You may need to experiment with different values to determine the optimum number of buffers for your applications. Refer to your operating system reference manual for more information on the CONFIG.SYS file and the BUFFERS statement.

Problem: SY-TOS does not execute properly and returns to the DOS prompt after typing **SYTOS** and pressing **<Enter>**.

Causes: SY-TOS' configuration file is damaged or not installed properly.

Solution: Re-install SY-TOS using the ST-INSTAL utility.

Problem: SY-TOS appears to hang the system after attempting to copy information from disk to tape or from tape to disk.

Causes: A conflict may be occurring with the hardware settings of your controller card and those of another option board installed in your system.

Solution: In order to operate properly, SY-TOS requires that the DMA and Interrupt settings of the tape controller card are set to certain values. In some instances, the settings of other option boards installed in your system (for example, a network board or a mouse) may conflict with those of the tape controller board. Check the configuration of any option boards that are installed and make sure they do not conflict with the settings used by the tape controller board.

Problem: SY-TOS reports "DATA ERROR ON TAPE" or "INVALID TAPE IDENTIFICATION LABEL."

Causes: The tape being used may be damaged.

The controller board may not be seated properly.

A conflict may be occurring with the hardware settings of your controller card and those of another option board installed in your system.

Solution: Try using another tape.

Reseat the controller board.

In order to operate properly, SY-TOS requires that the DMA and Interrupt settings of the tape controller card are set to certain values. In some instances, the settings of other option boards installed in your system (for example, a network board or a mouse) may conflict with those of the tape controller board. Check the configuration of any option boards that are installed and make sure they do not conflict with the settings used by the tape controller board.

Problem: SY-TOS reports "ERROR READING FILE <FILENAME.EXT>."

Causes: There is an error on the disk, therefore, the file requested by SY-TOS is unable to be read successfully by DOS.

Solution: Back up all files on the disk and verify the backup. If necessary, exclude the file that DOS cannot read or try to copy it to a floppy disk. Try to correct the situation so that DOS does not attempt to use this area again. This may be accomplished either by reformatting the hard disk or by using the appropriate disk management utilities to mark the area of the disk that is bad. *Make sure you have a backup copy of the information on your disk before reformatting*. Restore all uncorrupted files using SY-TOS and copy or recreate the file from the floppy disk. If the damaged file is unrecoverable, you may be able to restore a previously backed up version of the file and rebuild it from that point.

Problem: SY-TOS reports "ERROR READING FILE HEADER. PRESS <ENTER> TO CONTINUE OR <ESC> TO QUIT."

Causes: SY-TOS has encountered an error reading a file on tape. This may occur either because there is an error on the tape or because there is a problem with the tape drive.

Solution: Press **<Enter>** to skip over this file and continue with the SY-TOS operation. Press **<Esc>** to stop the operation.

If you receive this message during a Verify operation, it is highly recommended that you repeat the backup and verify it again. If you receive this message during a Restore operation, you will be unable to recover this file if you press <Enter> to continue. Other files will be unaffected.

Problem: SY-TOS reports "INSUFFICIENT MEMORY ..."

Causes: There is not enough conventional memory available for SY-TOS to operate.

Solution: Use the DOS command CHKDSK to view how much system memory is available for SY-TOS. Increase system memory (up to 640KB) and/or remove any overhead or "memory resident" programs that may be taking away system memory from SY-TOS.

Problem: SY-TOS reports "INVALID TAPE FORMAT."

Causes: The tape you are using has not been created by SY-TOS or the drive is having problems reading the tape.

This may occur when transporting a tape to a lower capacity tape drive if the tape was created on a higher capacity drive.

The version of SY-TOS used to create this tape is a later version than that being used to read

the tape. Because Sytron continues to enhance SY-TOS to be compatible with the latest advancements in personal computer technology and operating systems, previous versions of SY-TOS cannot access information on tapes created with a later version of SY-TOS.

There may be a problem with the tape drive.

Problem: SY-TOS reports "NO TAPE CONTROLLER PRESENT".

Causes: The tape controller board may not be seated properly or may be damaged.

The tape system may not be powered.

The tape controller board may not be physically present in the system. For example, this may occur in a network when the tape system is attached to a file server but SY-TOS is being executed from a workstation.

The cable to the tape system may be damaged or not be properly connected.

Solution: Check to see if the tape controller board installed in your system is seated properly or try a different slot in your system.

Make sure the tape system is turned on.

If you have an external tape drive, check the cable to your tape system. Make sure it is connected properly, oriented correctly and that it is not damaged.

If you have an internal tape drive, make sure that the interface cable from the controller and the power cable are attached to the drive. Also make sure the cables are oriented correctly.

Problem: SY-TOS reports "REACHED END OF TAPE DOS DISK BEFORE REACHING END OF DISK DOS DISK" during a Verify operation.

Causes: More information exists on the hard disk than is present on the tape when verifying a DOS Disk backup.

The Backup Disk operation might have been stopped before the backup was completed, or the tape may be faulty.

The Library or Journal files may have been open while SY-TOS was backing up information. This could have resulted in a change in the size of either file from the time SY-TOS was backing up to the time it was verifying.

Solution: Close the Library and/or Journal and attempt the operation again or specify a different DOS disk for the Library and/or Journal files to reside on. Back up the disk again and then re-verify.

Problem: SY-TOS reports "TAPE SYSTEM IS NOT READY."

Causes: The tape system is not powered or is not receiving enough power.

The tape cartridge is not properly loaded.

The tape may have broken or may have spun off the reel.

The cable to the tape system may be damaged or not be properly connected.

Solution: Check to see if the tape system is turned on.

Make sure that the tape cartridge is properly placed in the drive.

If you have an external tape drive, check the cable to your tape system. Make sure it is connected properly, oriented correctly and that it is not damaged.

If you have an internal tape drive, make sure that the interface cable from the controller and

the power cable are attached to the drive. Also make sure the cables are oriented correctly.

Problem: SY-TOS reports "TROUBLE OPENING SOURCE FILE. INSTALLATION ABORTED!" when attempting to install SY-TOS.

Cause: SY-TOS cannot find all the files it needs to be installed. The diskette used to install SY-TOS may have been made using the DOS COPY command.

Solution: Re-install SY-TOS. If you are using a copy of the master diskette to install SY-TOS, make sure it is made using the DOS DISKCOPY command.

Problem: SY-TOS reports "TROUBLE WITH LANGUAGE FILE!"

Cause: SY-TOS is unable to find the files it needs in order to operate or those files are corrupted.

SY-TOS is not being run from the directory where it resides. SY-TOS cannot be run by issuing a DOS PATH statement in AUTOEXEC.BAT, from the command line or from another batch file; it must be executed from the directory where SY-TOS and its associated files are installed.

Solution: Execute SY-TOS from the directory where SY-TOS and all SY-TOS related files are installed.

If necessary, re-install SY-TOS using the ST-INSTAL utility.

Network Specific Problems/Solutions

Problem: SY-TOS reports "CREATE THE GROUP EVERYONE; ADD ALL USERS TO THAT GROUP; RESTART SY-TOS."

Cause: Under the Novell NetWare environment, this message is displayed when a user who is not logged in to the network tries to execute SY-TOS.

Solution: Log in to the network, preferably as SUPERVISOR.

If the user group EVERYONE doesn't exist, create it and add all users.

Problem: SY-TOS reports "ERROR READING DISK FAT."

Cause: Under the Novell NetWare environment, this message is displayed when the Configure Network command is set to No in the ST-CONFIG utility and a user attempts to access a network drive such as F. For example, if a user attempts to run SY-TOS with Configure Network set to No when he/she is currently on a network drive, or if he/she is currently on his local disk and attempts to change the current disk in SY-TOS to a network drive.

Solution: Set the Configure Network command to Yes in the ST-CONFIG utility and log in to the network.

Problem: SY-TOS reports "FATAL ERROR DURING INITIALIZATION".

Cause: This error may occur if there is not enough system memory.

Solution: Run SY-TOS as if it were on a standalone, non-network system. For example, do not boot the network up, set Configure Network to No in ST-CONFIG and run SY-TOS. If the error does not appear, it is possible that the network is using too much memory and there is not enough left for SY-TOS to run. It is recommended that you install 640KB of memory.

Problem:	SY-TOS reports "LIBRARY DISK IS NOT A VALID DISK".
Cause:	May occur when executing SY-TOS on a workstation which does not have a hard disk and the default Library Disk (disk C) was not changed in ST-CONFIG.
Solution:	Use the Options Library Disk command in ST-CONFIG to change the default disk for the Library to a disk which is available on the system or set the Options Library command to No in SY-TOS.

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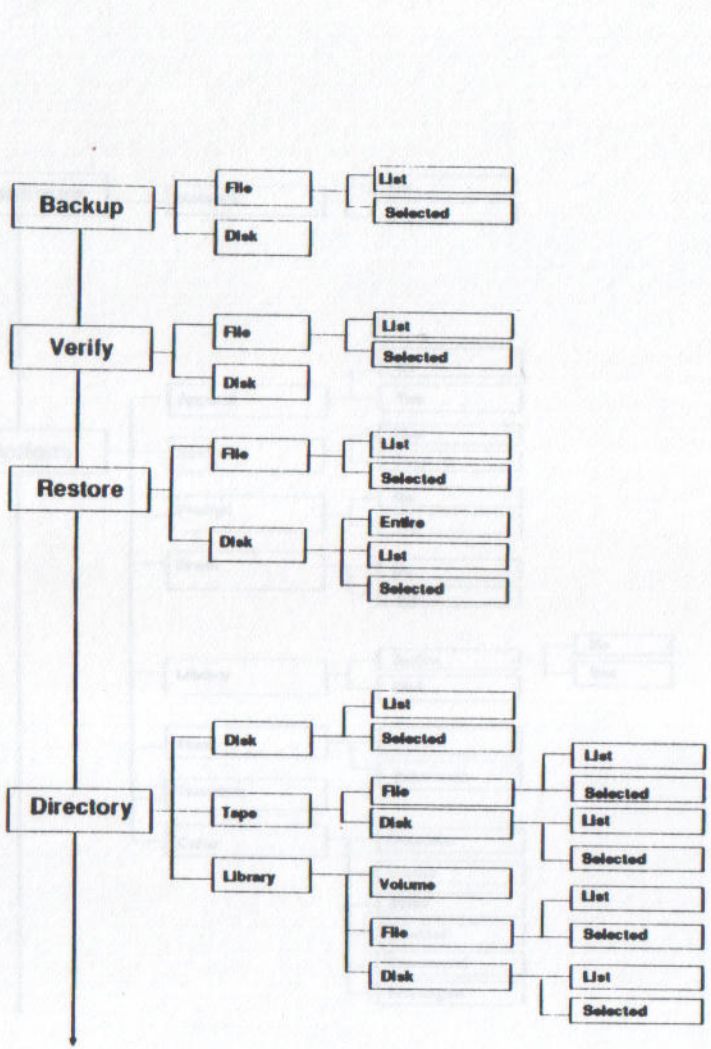
Appendix D. Finding Your Way around SY-TOS

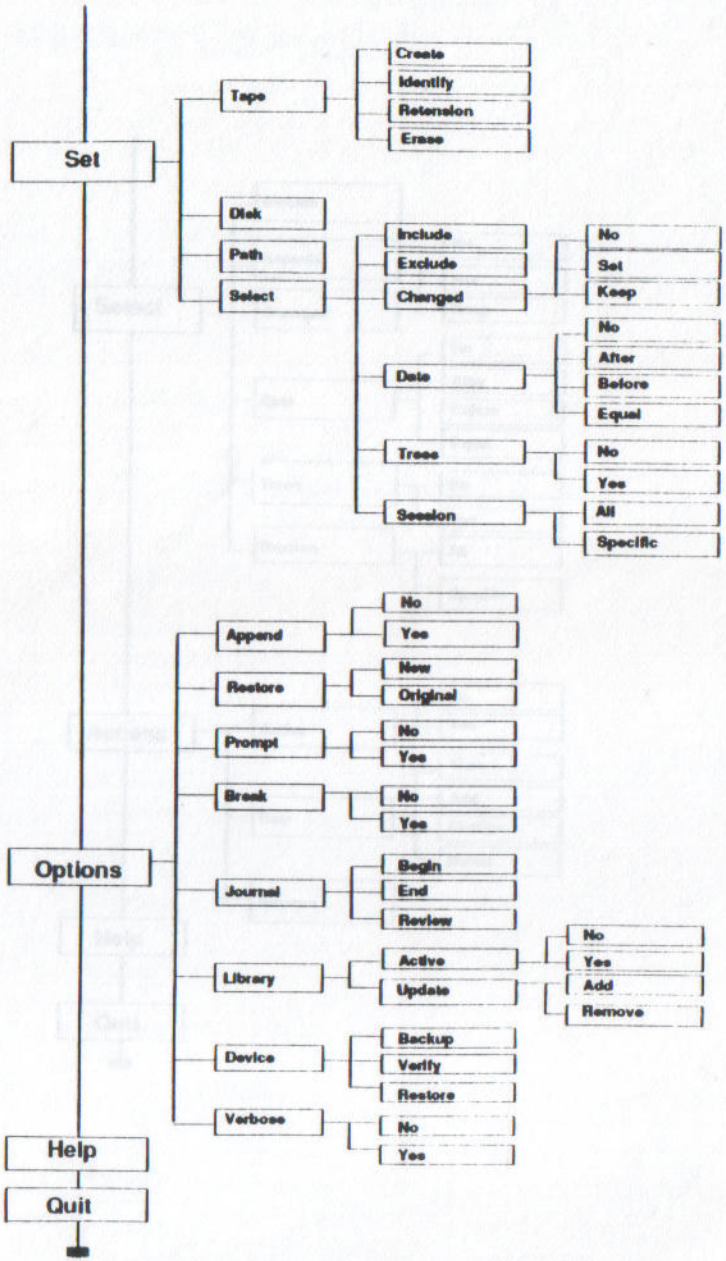
The following pages contain a map of the commands in both the Advanced menu system and the ST-CONFIG utility.

SY-TOS' commands are organized in a tree structure. The command bar at the top of the screen displays one level of commands at a time. When you select a command from the top level, SY-TOS displays the next level of related commands. Until you become familiar with SY-TOS' command tree structure, you may not always know which command to select. Use this appendix to quickly locate the path you need to take when selecting a command.

This appendix provides a complete list of SY-TOS commands. Please note that some of the commands in the Advanced menu system change or are removed from the command bar when operating SY-TOS under a network environment. See Appendix B for a list of these commands. Other commands may not appear if the normal DOS disk partition limit of 32MB has been exceeded using certain partitioning software. These exceptions are noted within the command descriptions in Chapter 5.

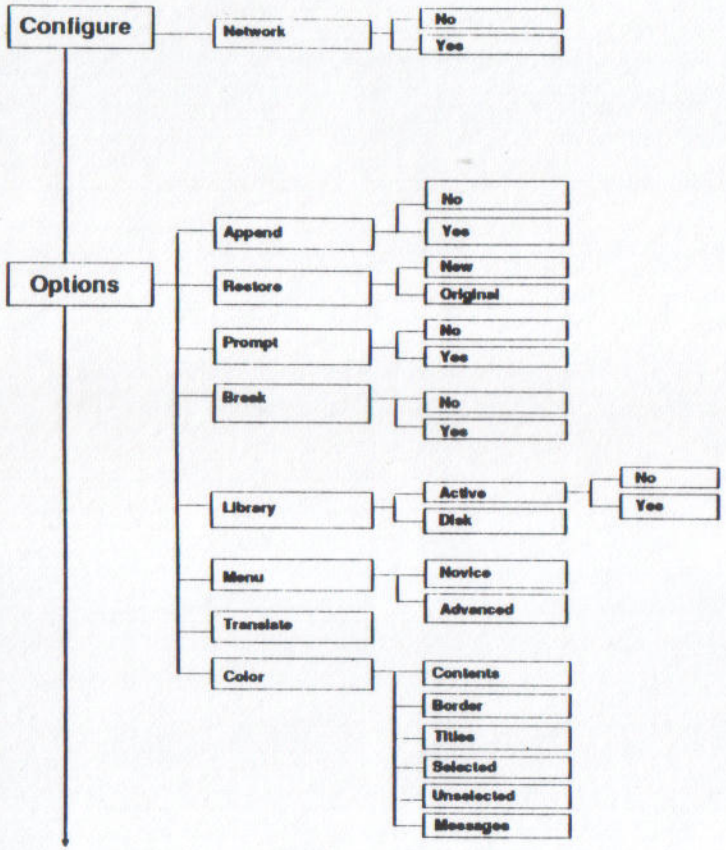
Advanced Menu Command Structure

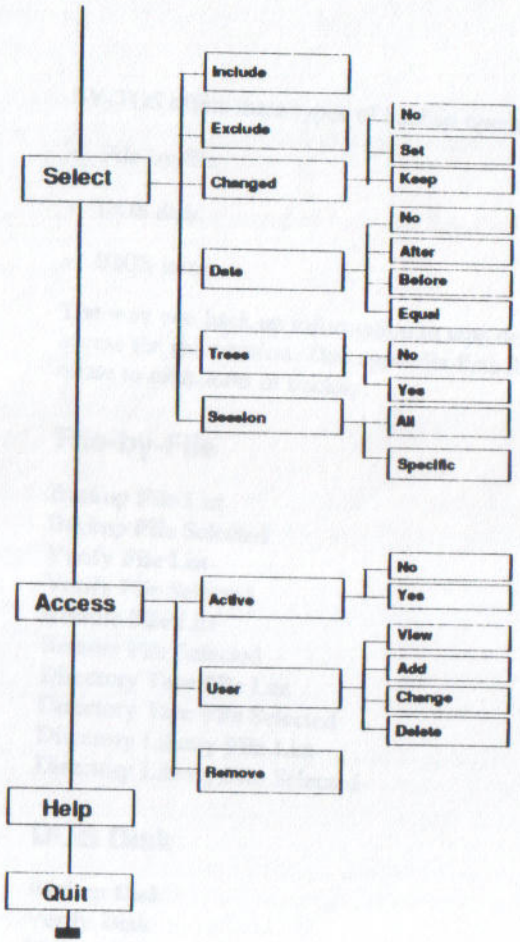




file-by-file access from a DOS Disk backup.

ST-CONFIG Command Structure





File-by-file access from a DOS Disk backup.

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Appendix E. Overview of SY-TOS Backup Commands

SY-TOS offers three types of backup operations:

- File-by-file.
- DOS disk.
- BIOS image.

The way you back up information to tape determines how you access the information. This appendix lists the commands that relate to each form of backup.

File-by-File

Backup File List
Backup File Selected
Verify File List
Verify File Selected
Restore File List
Restore File Selected
Directory Tape File List
Directory Tape File Selected
Directory Library File List
Directory Library File Selected

DOS Disk

Backup Disk
Verify Disk
Restore Disk Entire
Restore Disk List*
Restore Disk Selected*
Directory Tape Disk List*
Directory Tape Disk Selected*
Directory Library Disk List*
Directory Library Disk Selected*

* File-by-file access from a DOS Disk backup.

BIOS Image

Options Device Backup
Options Device Verify
Options Device Restore

GLOSSARY

@ file A text file containing names of files that SY-TOS will back up, verify and/or restore. The complete pathname of the file is preceded by an "@" symbol.

Backup The ability to store a copy of disk information on a tape. This tape can then be used to recover any information that may have been lost or damaged on the disk.

Batch File A user generated executable text file. This file has the ability to run specified programs which have been identified within this file. It is designated in DOS by its ".bat" file extension.

Buffers A term designating a portion of system memory that DOS sets up and uses as a temporary storage area for transported information.

Byte Is a unit of measure of storage capacity designated as one character of information.

Command Bar A horizontal list of commands or functions that appears at the top of the screen in the SY-TOS Advanced menu system and the SY-TOS utilities.

Command Line Operation A method of executing SY-TOS commands from the DOS command prompt.

Current Disk The disk displayed in the SY-TOS DISK window.

Device Referred to in SY-TOS as the entire physical fixed disk drive unit which is accessible by a drive letter. May also refer to a printer where you may choose to log information using SY-TOS' Journal feature.

Directory A logical subdivision of a disk. A directory is a special kind of file that DOS lets you create to organize the files stored on a disk, much like a cabinet that holds many file folders.

Directory Listing A sequential list of files from the current disk, tape or Library system.

Disk SY-TOS refers to a disk as any logical unit that the DOS operating system designates as one. Generally disks are classified by letters, where "A" and "B" refer to floppy disk drives, and "C" refers to a fixed disk drive.

A DOS disk may take up all or part of a physical fixed disk unit. More than one DOS disk may reside on a physical fixed disk unit, each classified with its own unique disk letter.

DMA "Direct Memory Access", refers to the channel or roadway that information travels on between devices, such as from a disk system to a tape system. SY-TOS requires a DMA channel in order to transport information to and from a tape.

DOS Stands for Disk Operating System. It processes the commands that you and SY-TOS send to it. It also controls the various devices that your computer uses such as a disk drive.

DOS Disk All or part of a disk device that is designated as a logical DOS partition where information is kept under a format that is determined by the DOS operating system.

Erase To permanently remove information from a tape.

Error Message Any message that appears on the third line of the screen in reverse video accompanied by a tone when SY-TOS detects a problem and cannot complete a task. Error messages may also appear in the MESSAGES window.

File A term identifying a unique collection of information stored on a disk or tape.

File Extension A suffix attached to a filename which consists of a period followed by up to three characters.

Filename The name you assign to a file. It can be up to eleven characters long (8 characters for the prefix and 3 characters for the extension, with a period separating the two), and can contain letters (A-Z), numbers (0-9) and the following special characters: $ & # @ % ' ' ( ) - { } _ and !

File Selection Criteria The criteria settings that SY-TOS reviews before backing up, verifying, restoring or listing files. You specify the file selection criteria from the Select commands in the ST-CONFIG utility or from the Set Select commands in the Advanced menu system.

File Server The system disk which contains the networking software in a network environment.

Image Operations Refers to SY-TOS backup, verify, and restore operations that treat disk information in a non-file-oriented manner which allows faster performance of these operations. (For example, DOS Disk and Device operations.)

Interrupt A channel that SY-TOS uses to control the transport of information to and from a tape. SY-TOS uses an interrupt channel to allow simultaneous operation of the disk and tape systems during a backup, verify, or restore operation.

I/O Base Address A starting location within your computer system's allowable hardware Input/Output ports that is used by SY-TOS to communicate with the tape system.

Journal A file containing the information that SY-TOS displays in the MESSAGES window. You may keep this information within a disk file or send it to a printer.

Kilobytes Is a unit of measure of storage capacity where 1 kilobyte is equal to 1,024 bytes. Kilobyte is abbreviated "KB".

Library System An automatic logging system which keeps track of all tape volumes and their contents created with SY-TOS.

Megabyte Is a unit of measure of storage capacity where 1 megabyte is equal to 1,038,576 bytes. Megabyte is abbreviated "MB".

Modified File A disk file that has been changed or altered since the last time it was backed up.

Non-DOS Partition An area on a disk device that is designated as a logical disk according to another operating system's standards apart from DOS.

Partition A division of the computer's fixed disk. Each partition may contain only one operating system.

Pathnames A path or route that is specified to locate particular files within a directory (if present) on a disk or tape.

Prompt A SY-TOS message that requires you to type information such as a filename before SY-TOS executes the command. The STATUS indicator changes to INPUT to notify you that SY-TOS is waiting for information.

Restore A SY-TOS procedure for copying information from a tape to a disk.

Root Directory Considered as the primary directory having no parent directory under a DOS disk.

Sequence A number referring to a specific occurrence of a disk or device backup recorded on tape.

Session A number referring to a specific file-by-file backup recorded on a tape.

Subdirectory A subdivision of the root directory or another subdirectory.

Switches A sequence of SY-TOS command codes that SY-TOS will translate into its respected commands during its operation from the DOS command prompt.

Tape The medium on which SY-TOS stores information.

Tree Structures The organization of directories or commands into groups of related files or commands. Both DOS' file directories and SY-TOS' command structure utilize this type of organization.

Verify A SY-TOS procedure which assures that information placed onto a tape correctly matches the information on the disk from which it came.

Volume A tape cartridge with an identifying name that contains backed up information.

Wildcard A DOS option for specifying groups of files by using the "*" and "?" characters as substitutes for filename characters.

Workstation User systems in a network environment which have access to the network file server.

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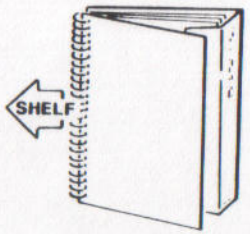
TO USE,
TUCK FLAP
INSIDE BACK COVER



TO STORE,
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INSIDE FRONT COVER

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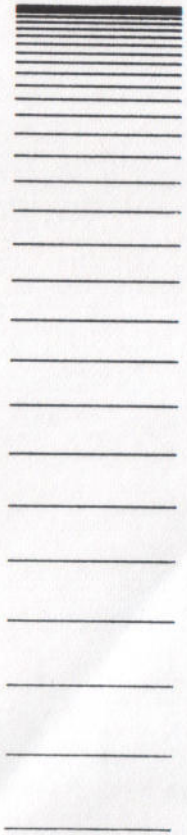
User's Guide



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